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A PROPOSAL to admit free of duty mining machinery, such as is not being now manufactured there, has been made by Mr. FORSTER, the Canadian Finance Minister, in the budget just introduced in the Canadian Parliament, and will be welcomed by the mining men in the Dominion. At present there is a heavy import duty on mining machinery, and as little is manufactured in Canada, this has weighed grievously on those who have tried to develop the mineral resources of the country.

THE iron trade of the country is passing through a period of some anxiety in regard to prices for the near future. A decline in price which was not entirely unexpected has taken place within the past few weeks, and the boom which was by some anticipated, and by others feared, has been "declared off." Of the two possible normal causes which have brought about the decline in prices—viz., decrease of consumption and increase of production, it is safe to say that the latter only is the real cause. Apparently, there never was a time in the history of the country when there was a better prospect of a steady and regular increase in the consumption of iron, at a slightly higher rate than the increase of population. The conditions in this respect are as healthy as could be desired. Production, however, during the last six months has been increasing at a much faster rate, and this, as might have been expected, has checked the tendency to a rise in prices which characterized the last half of 1889, and has brought about a reaction. The recent decline in prices may prove a fortunate thing for the trade on the whole. It will check the blowing-in of more furnaces and prevent a great overproduction, which might lead to a severe and prolonged depression. Prices will now adjust themselves to a normal basis, and we anticipate that there will be a steady and large market for the latter part of the year, without either a boom or a depression.

SO MANY modifications in Secretary WINDOM'S original silver bill have been proposed that it is not easy now to define the status of the question and its probable outcome.

The views of the ENGINEERING AND MINING JOURNAL have been frequently expressed; they are, briefly, that, as an economic question, there is no justice in taxing the nation for the exclusive benefit of an old, well-established and prosperous industry, and that on this ground there is no more occasion for the government making with the taxpayer's money a corner in silver, to advance its price for the benefit of silver producers, than for the government to use the public money to advance the price of iron, or building stone, or cheese.

The ill effects of buying a limited amount, even if it were $4,500,000 a month, would simply be the improper use of the people's money; but the scheme which proposes that whenever the market price of silver shall have reached $1.29 an ounce we are to have free coinage of silver, the government being obliged to coin free of charge any silver brought to it, would be a disastrous measure.

The price of silver would soon go to $1.29 an ounce, and then free coinage would quickly drive all the gold out of this country. Our government and other bonds would be sent over from Europe at once, and gold taken back. Silver from all over the world would be sent in and exchanged for gold just as long as gold could be obtained for it, for no one would believe the market value of silver could be maintained, and everyone would exchange it for gold while he could. In a very brief time gold would disappear, and the United States would have a single silver standard like Mexico or India, and we would have to pay the premium on gold on all our foreign transactions just as other silver standard countries do. This country could keep up a corner in silver for a short time, but it would be at a fearful cost to the country and to every industry in it for years to come.

PROSPECTS OF THE IRON ORE SUPPLY.

The importation of iron ore into the United States shows remarkable fluctuations, which are not to be accounted for entirely by variations in the demand in this country or the condition of its iron business, but must, to some extent, be due to fluctuations in cost of mining and in the demand for ore in other countries than our own. Here are the figures:

IMPORTS OF ORE DURING THE FISCAL YEARS ENDING JUNE 30.

Imported from	1885.	1886.	1887.	1888.	1889.
French and African Mediterranean ports	25,360	107,366	215,760	163,496	78,137
Italy	16,213	20,982	114,423	98,343	66,812
England	11,890	15,033	72,546	56,090	29,216
Canada	47,860	7,906	18,420	13,380	9,284
Greece		7,700	44,173	25,707	13,480
Spain	243,906	428,586	522,719	416,138	190,460
Cuba	28,209	51,268	109,928	117,504	225,525
Total all countries	425,870	701,243	1,141,774	919,644	652,032

The decline in imports during the last three years in the face of a greatly increased production of pig iron indicates that our iron mines are more than keeping pace with our blast furnaces in increase of production. Cuba is now the largest source of our foreign supply, and Spain has taken a second place. The mines in Cuba were opened only a few years ago by an American company, and they might almost be considered part of our domestic supply, as is also that from the American-owned Canadian mines. Leaving out the importation from Cuba, the total of foreign ores imported is less than four per cent. of our domestic production. The increasing cost of ore in Spain and other European countries indicates the probable cessation altogether of our importations from these sources, and will leave us dependent upon our own country, Cuba and Canada. Fortunately in these countries, our near neighbors, as well as at home, there is a constant increase in the development of iron mines, and no prospect of any scarcity in either source for a long time to come.

THE NICARAGUA CANAL.

The New York *Herald* has published what purports to be an interview with a Señor C. TAUMALA, of San José, Costa Rica, on the subject of the Nicaragua Canal. The small progress in the work—of which the *Herald* correspondent makes Señor TAUMALA complain—is absolutely unfounded; and any one possessing any acquaintance with the subject would know that a portion of the work has necessarily to wait the opening of the harbor.

San José is evidently not a good source of information, for although it is in Costa Rica, communication between it and the line of the canal is not so frequent or so regular as between New York and the company's headquarters at Greytown. The actual facts are that the canal company has constructed 560 feet of the breakwater, and that no difficulties such

as had been anticipated by some engineers are met with in its construction. A contract has been let upon satisfactory terms to responsible and experienced contractors for the opening of the harbor, and by the end of next month this portion of the work will be commenced.

In addition to the dredges furnished by the contractors, the company have contracted for a very powerful sea-going dredge with the firm of Messrs. Simons & Co., of Renfrew, Scotland, which has furnished the most approved vessels of this type for similar work. This will also be delivered at Greytown by the end of May. A standard gauge railroad has been contracted for with Mr. C. P. Treat, of Chicago, from the harbor to a point about 17 miles inland, giving access to the great divide rock cut, and locks Nos. 1, 2 and 3, at which points heavy plant will be required.

The only reason why the contract for the excavation of the section of the canal has not been let up to lock No. 1 is that, until the harbor is opened, only dredges of very light draught could be used, and the entire execution of the contract would have to be based on the employment of such dredges. This would have narrowed the competition for the work, and would have imposed a condition which would add unnecessarily to the expense.

By opening the harbor all dredging contractors will be put on the same footing, and the railroad constructed, it will be possible to commence work without delay on the great divide cut and the locks on the Atlantic side of Lake Nicaragua, without waiting for the excavation of the first section of the canal, 12 miles, up to lock No. 1, as was originally intended. This section can be excavated within a very short period, twelve months if necessary, as the nature of the ground is very favorable for the work, so that not only will money be saved by this change of plan, but no time will be lost.

GOLD AMALGAMATION.

An interesting paper on the Development of the System of Amalgamation of Gold Ores, by Professor Robert H. Richards, in the *Technology Quarterly* for February, and the Treatise on Gold Amalgamation and Concentration, by Messrs. Macdermot and Duffield, which is reviewed in another column of this issue, are works both instructive and of great assistance to the practitioner.

Professor Richards contributes his experience in making laboratory milling tests at the Massachusetts Institute of Technology, and although on a small scale, these tests have been of a really practical character, and serve as a good model for similar work. He defines the two difficulties encountered in obtaining accurate results as the "over-lapping error" and the "new plate error." By the first of these is meant that very real difficulty of cleaning the batteries and plates so perfectly after one test, that no gold obtained from the test will be left in the batteries or on the plates to be credited to a subsequent run.

The second source of error is in new plates, as is well known to every millman. Professor Richards' first method of overcoming the overlapping error consisted in using the thinnest copper plates obtainable, about $\frac{1}{16}$ inch thick, which after each run were entirely dissolved in sulphuric acid, and the gold recovered; but this was, of course, too troublesome and expensive, and was abandoned. Then the liberal use of silver amalgam on the plates was tried to permit of the gold being entirely scraped off with it, and by this means also, the overlapping error was completely overcome.

It should be pointed out, however, that neither of these devices will overcome the difficulty if copper plates are used inside the battery. In practice it is impossible to make a complete clean-up after each test run. It is also true that inside battery plates frequently play a very important part in gold saving. It seems, therefore, not improbable that in attempting to ascertain the exact amount of gold amalgamated in a small lot of ore, too little opportunity is given the gold to amalgamate, and the final result is too low.

The "new plate error," by which Professor Richards means the poor work done by plates before being coated with amalgam, is overcome satisfactorily by the use of silver amalgam applied before commencing a test. This difficulty, as well as the former one, would probably be avoided and better average results attained by simply always keeping the plates inside and outside the battery in first-class order, with sufficient amalgam on them to insure good amalgamation, and then taking the difference between the assay value of the ore fed to the mill, which can always be ascertained by careful sampling and the assay value of the tailings, the samples of which, however, should not be taken every fifteen minutes by the dipperful, as suggested by Professor Richards, but more frequently and by some automatic sampler. This is the general practice in other sampling works, and seems to give satisfactory results.

No doubt Professor Richards inculcates lessons of great value to his students in the great care and extreme nicety requisite for the successful carrying out of his system, but it is also desirable to approximate the lessons as nearly as possible to actual milling practice, and this cannot be done without the use of inside plates to the battery.

THE DEVELOPMENT OF AMERICAN INDUSTRY.

The importance of the Tariff bill, which proposes to increase the war tariff on our people by more than $12,000,000 a year, or, excepting sugar, increases it no less than $40,000,000 a year, as stated by the Senate Committee that formulated this bill, is greatly lessened by the possibility of the adoption of the pending reciprocity treaties with American countries, possibly including even Canada, and which contemplate almost free trade between this country and those that may accept these treaties.

It seems, at least, illogical that, on the one hand, our Congress should pass its time legislating to increase even the war tariff, and that at the same moment the State Department should be negotiating free trade treaties, and it is by no means certain that England, which imposes no duty on our goods, would not be able to avail itself, under the "most favored nation" clause of existing treaties, of the free trade offered our American neighbors.

Certain it is that the popular opinion in this country to-day, as evidenced by nearly every election that has taken place during the past year, is unmistakenly in favor of reducing our war tariff and against the frightful extravagance of Congress, which is chiefly induced by the surplus in the treasury due to this high tariff. No less an authority than Senator Sherman recently stated in conversation with some of the heads of the Republican party, while referring to the proposed tariff bill and to the signs of the times—"unless we change our policy we (our party) will go into liquidation." Many far less experienced politicians than Senator Sherman have come to the same conclusion, and as far as a non-political observer can read the signs, it is highly improbable that the proposed tariff bill will pass in its present shape or at least that it will become operative.

The Engineering and Mining Journal takes no part whatever in party politics, but our long experience in studying and recording the operation of economic policies and their effects on the prosperity of nations, has given us a better opportunity than most of our readers possess to weigh justly, as we do without prejudice and dispassionately, the bearing of these economic policies upon the development of our industries and the welfare of our people.

We are not advocates of free trade. The burdens imposed upon us by the war and by the extravagance of our Congress necessitate a heavy taxation of our people—not to their benefit, but to their injury—and until it is found that this extravagance is due to an intention to unduly benefit favored individuals through exorbitant tariffs, the imposition of a duty on foreign manufactures that would without such duty prevent the production of similar articles here, is, no doubt, the best way of providing the necessary money. When gross and unjustifiable extravagance in public expenditures is adopted as a policy, with sinister objects, then the people cannot long be kept in ignorance of the fact in a free country, and a change of policy ensues. Such a change may be sudden, and would then necessarily be very injurious to existing industries which had not had the opportunity to adapt themselves to the new conditions.

The enormous taxation our people have to pay, is a real and very pressing drawback to the development of our industries, and an unnecessary burden on our people which should be reduced and not increased.

Many of our manufacturing industries have arrived at that stage of development where their capacity to produce exceeds our home consumption, and foreign markets can only be opened by enabling us to produce cheaper by reducing these taxes, and with them the cost of raw materials entering into manufacture. In the interest of the development of American industries and of the prosperity of our people the Engineering and Mining Journal advocates economy in the administration of our government, a reduction of taxation, the free entry of raw materials for manufacturing here, and a gradual reduction in the protective tariff on the products of old and well-established industries. It is certainly supreme folly to close our eyes to the storm that is brewing and that already shows clearly above the horizon, and that, unless greater moderation in the demands for protection be very promptly shown, will gather such force that it will sweep away suddenly even the moderate protection which is absolutely necessary to the very existence of some young industries and to the growth of others, and will, by suddenly precipitating new conditions upon the whole industry of the country, cause irreparable injury. It is quite time our war taxes should go and that the good of the country rather than the enrichment of the few favored ones should be the object of our national legislation.

NEW PUBLICATIONS.

Hamilton & Dysart's Mining Map of Marion County, Arkansas. Published by the compilers, Yellville, Marion County, Ark., 1890. Price, $2.50.

This is a map prepared mostly from original data, showing the mineral localities of Marion and a part of the adjoining counties. The scale is one inch to the mile. Outcrops of zinc and lead ores are indicated by conventional marks, and county roads, railroad surveys, etc., are given. The work has apparently been done with much care, and the map should be of value to those interested in the mineral development of the locality

GEMS AND PRECIOUS STONES OF NORTH AMERICA: A popular description of their occurrence, value, history, archæology, and of the collections in which they exist; also a chapter on pearls, and on remarkable foreign gems owned in the United States. By GEORGE FREDERICK KUNZ. Published by the Scientific Publishing Co., 27 Park Place, New York, 1890. Cloth, large 8vo. 336 pp. Illustrated with eight colored plates and numerous engravings. Price, $10.

Mr. Kunz, who is well known as an authority upon the subject of gem stones, and who is the expert for Tiffany & Co., possesses peculiar facilities for the preparation of a work of this kind. His labors in connection with the division of mineral statistics of the Geological Survey have also enabled him to obtain much information as to localities of occurrence and to keep in touch with the industry at large. Thus equipped on both the mineralogical and commercial sides, he has succeeded in bringing together a vast amount of interesting descriptive and historical information never before presented with any similar degree of thoroughness. His admirable monograph occupies a field long vacant, and though it professes to deal only with the precious stones of North America, it also covers the whole range of the subject from a general point of view and gives no little insight into the condition of the gem interests of the whole world. The references to foreign occurrences are naturally desirable for comparison and guidance in treating of the American precious stones.

After a general introduction the author takes up the several species and varieties of the gem minerals in the first eleven chapters, in which the stones are described by groups and individually, with a short mineralogical explanation, usual mode of occurrence, history of discoveries and detailed accounts of the different productive localities and of specially important finds. Chapter XII. is devoted to pearls, Chapters XIII. and XIV. present a view of the Canadian, Mexican, and Central American localities, and Chapter XV. describes the remarkable aboriginal lapidarian work of North America, a much discussed and most interesting theme. The closing chapter includes definitions, imports and production, values, cutting of diamonds and other stones, watch jewels, collections of gems and minerals, uses of precious and ornamental stones for the ornamentation of silver and furniture, and for interior decoration, etc.

Apart from its interest to the student, archæologist, mineralogist and geologist, the work has a decided practical value for the miner, prospector and all persons who are likely to meet with valuable stones or to be deceived by imitations and misnamed specimens. In the search for mines or specimens the hints given in this book would be of high importance. It is also a trustworthy guide for the jeweler and dealer. As a book of reference, "Gems and Precious Stones" will long be the acknowledged standard, and it will, therefore, be an acceptable addition to public and private libraries, and more especially to those of educational institutions.

No more artistically attractive book has ever been issued in this country. The handsome binding and paper and the perfection of typographical details make it at once an object of admiration to all who have a taste for *editions de luxe*, and are especially appropriate in the make-up of a work dealing with a subject which in itself has such close relationship to art and refinement.

The superb colored plates illustrating especially fine and typical specimens are by far the best examples of their kind which we have seen. They are reproduced by Messrs. Prang & Co., of Boston, from drawings made from the stones, and show the results of most painstaking care in securing the utmost truth of representation together with the finest artistic effects. The numerous other engravings offer a ready means for identifying specimens, and illustrate striking examples, views, etc.

Thus far the development of the precious stones of the United States has been in an unfortunately backward stage, notwithstanding the great variety of species known to exist in this country and the wide distribution of the localities where they occur. Undoubtedly Mr. Kunz's excellent memoir will do much to excite attention to the matter, and by stimulating the search for valuable gems should lead to important results when accurate information of the kind given in "Gems and Precious Stones" becomes accessible to the public in its present convenient form. Heretofore knowledge of the subject has been pretty closely confined to specialists, a few mineral collectors and dealers, while the outside world has had a very limited idea of the value, common mode of occurrence, methods of determination and ways of prospecting for and mining precious stones. On one hand many mistakes, exaggerations and deceptions have been allowed to pass current, while on the other hand it is certain that important finds have been overlooked and specimens thrown away as valueless or even destroyed by false tests made in ignorance. With the dissemination of exact knowledge we may look for an increase in the production of gem stones in this country, now amounting to only some $100,000 to $200,000 worth in the rough state per year, and in time it should rise to a respectable figure. There is, beyond a question, a most promising field for exploration in this direction.

LOSSES IN GOLD AMALGAMATION, WITH NOTES ON THE CONCENTRATION OF GOLD AND SILVER ORES. By WALTER MCDERMOTT and P. W. DUFFIELD. Published by E. & F. N. Spon, London and New York, 1890. Cloth, 8vo., 98 pp.; with 6 pl. Price $1.75. Sold by the Scientific Publishing Company.

It is a great relief to find, among the mass of indifferent or misleading books on gold and silver metallurgy, which are being poured forth in apparently unending profusion, a work which is really satisfactory. One is apt to become wearied of the reiteration of things long since established or disproved, of accounts of machinery and processes now obsolete, of compilations of all the crude and untried devices which have had the stamp of the Patent Office, and of accounts of appliances and methods now in use, but with which all capable mill men are perfectly familiar. These make up the contents of most of the books on the metallurgy of the precious metals, and of course it is well enough for certain purposes—as in the instruction of young engineers, and for the "general reader"—that there should be such books. But the mill man needs something a good deal better, and this is what the present authors offer. They assume familiarity with the usual forms of mill machinery and the well recognized methods which have stood the test of time and actual work; then, without proposing any innovations upon established means, they proceed at once to discuss the vital point of the best selection, adaptation and combination of these means. This is manifestly the practical way of handling the subject, and throughout the whole of this small but very comprehensive book the authors seem to have steadily kept in view the main purpose and have wasted no words by going outside the limits they marked out at the beginning—which might be stated to be the determination of the proper arrangement of plant and treatment to secure the best commercial returns. It would be well if there were more metallurgical books made on this plan; that is, monographs on a single definite specialty in place of general treatises giving a little of everything and disappointing in details.

But while we readily accord our commendation, it is only just to add that there are a few statements, or implications rather, which are at least open to argument. One point to which fair exception might be taken is the implied depreciation of rolls for crushing in advance of concentration. We fancy that mill men who have had experience with rolls working alongside of stamps will consider the relative avoidance of slimes by the use of the former to more than compensate disadvantages. Rolls are now doing good work in fine crushing, and work much better on moist ore (provided there is not much clay) than was formerly expected of them; and the best proof of this is to be found in the number now in successful operation in connection wi h concentration or chlorination.

Makers and users of rival concentrating machinery may take exception to the strong bias shown by the authors to one particular make. They do not, we think, claim too much for the form they assume as standard, but there are others which are also claimed to be doing good work. Yet perhaps it is unavoidable that, when discussing the handling of slimes and fine pulp, in so concise a manner, a single form of machine should be taken as typical of the whole class. At all events, a long description and comparison of the different machines in use would probably have been equally unsatisfactory to the advocates of each.

Some very solid common sense is contained in the following quotation, in regard to innovations on established practice, which we commend to the careful consideration of future inventors and directors disposed to experiment with untried novelties: "It is certain that new machines and new processes are and will be given attention by mining men in proportion to their probable merits; but the proper place for experiment is in a mill already as successful as known processes can be made. In a new enterprise, even when the expense of an experiment is undertaken by the inventor, the loss to the mine owner in case of failure must be very great, both in time and running expenses. The variety of modifications in approved processes ought at least to suggest the desirability of exhausting the known before drawing on the unknown and purely speculative. It should be also borne in mind that what might appear at first sight to be new processes, and even new machinery, are, in fact, nothing but old contrivances and plausible theories long ago exploded among practical men." Further along, figures are given to show the working results of modern mills, and that the losses in good practice are by no means so great as it is often supposed. "In California, on a considerable variety of gold ores, the percentage of gold saved averages 80 to 85 per cent., and most careful daily tests in some of the best gold mills using concentrators show 85 to 90 per cent." This is putting it pretty high, perhaps, but there are such records. "It is perfectly obvious, if mill tailings are averaging in value 25 to 75 cents per ton by the cheapest and simplest of all processes, that the chances of improvement, except in mere matters of economy of handling the ore and wear of machinery, etc., are very slight for the inventor." The averages of the Homestake, Alaska, El Callao, Yuba and Plumas-Eureka are cited, and reference is made to the Spanish mine works and others to show how a low grade of ore can be treated under favorable conditions.

A very fair view of working results as obtained on the large scale in different districts is presented; and indeed throughout the book there is a careful avoidance of using the peculiar conditions of any one place as a guide for predicting results elsewhere, the view given being a comprehensive one and embracing foreign gold fields as well as those of the United States, the latter, however, being referred to as the best examples of modern practice.

The consideration of the different classes of gold ores and of the various ways in which losses occur is carried out very systematically. This analytical mode of treatment renders the whole style very clear and obvia es repetition, while covering the ground quite exhaustively for so compact a treatise. In the discussion of the almost innumerable variations and combinations or successions of methods to fit particular cases, this mode of attacking what is really a very complex subject, particularly recommends itself to any one who wishes to follow the argument easily.

One of the best portions of the book is the discussion of combination processes for mixed ores, especially in regard to the question of precedence in alternate concentration and amalgamation, and the disposal of various classes of concentrates or hand-picked ore. A good deal of ingenuity and a wide experience are exhibited in working out some similar puzzling problems.

Reviving the Old Scheme to Utilize the Power of Niagara Falls, N. Y.—It is proposed to utilize the power of Niagara Falls by constructing a raceway and tunnel, the construction of the latter to be on the basis of a probable capacity of 120,000 horse power. The plan is practically the same as the one suggested by the late Augustus Porter in 1847. The contract has been signed between the Niagara Falls Power Company and the Cataract Construction Company of New York. The Niagara Falls Power Company is capitalized at $2,000,000. Charles B. Gaskill is president, Francis R. Delano, treasurer; Alexander J. Porter, secretary; and Albert H. Porter, resident engineer. The officers of the Cataract Construction Company are: President, Edward D. Adams, of Winslow, Lanier & Co.; Vice-Presidents, F. L. Stetson and Edward A. Wickes; Secretary, W. B. Rankine, and Treasurer, George H. Kent. Among the other prominent men connected with the company are members of the firms of Winslow, Lanier & Co.; Drexel, Morgan & Co. and Brown Brothers & Co. D. O. Mills, W. K. Vanderbilt and H. McK. Twombley are also mentioned in connection with the company. The engineers are Albert H. Porter, Coleman Sellers and Clemens Herschel. The contract calls for a completion of the work by January 1st, 1892, and involves an expenditure of $3,500,000. The purpose of the power company is to place the water power of Niagara Falls in the market, to be used for propelling machinery. It is proposed to place the power at the disposal of the city of Buffalo, as well as of the village of Niagara Falls.

CORRESPONDENCE.

We invite correspondence upon matters of interest to the industries of mining and metallurgy. Communications should invariably be accompanied with the name and address of the writer. Initials only will be published when so requested.
All letters should be addressed to the MANAGING EDITOR.
We do not hold ourselves responsible for the opinions expressed by correspondents.

The Minequa Mine, near Joplin, Mo.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: Your Kansas City correspondent is rather too strong with his statements of the Minequa property, near Joplin; it is nothing but a prospect, and parties in Kansas City are trying to boom the stock.

JOPLIN, Mo, April 8, 1890. FACTS.

The Quotation of Michigan Gold and Silver Mining Stocks.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: Your paper of April 5th has reached here. In looking over the report of your correspondent, Mr. D. M. Ford, of this place, I was surprised to see the quotations of the gold and silver stocks of the Ishpeming range. Were it not for the article accompanying the report, I should take it for granted that the report had not been corrected up to date. To any one basing his transactions on the figures given an injustice is done.

I have just returned from a visit to the range and know that these are not the correct figures. As I am not dealing in any stocks I will quote no prices. Mr. Ford can give the correct quotations if he will.

At the Ropes mine the company has not yet purchased a Huntington mill. It is a question with the management whether this mill can successfully treat the hard rock of the mine or not.

On the tenth level, west of the shaft thirty feet, a short upraise discovered the large body of ore which is being worked in the seventh, eighth and ninth levels, it having dipped slightly to the south. A diamond drill has been placed in the mine, and will be used to further explore the upper levels, and then to cross-cut the formation both north and south of the present workings.

The bullion product for the month of March is $8,127, assay value, which is $387.75 greater than that of February. The concentrates will net (estimated) $1,300, making the March run the largest of any month in the history of the mine. The annual report of the company, of which I inclose a copy, will show you what the mine did the past year.

In March the Gold Lake Company used the Michigan company's mill for eleven days on rock from their workings, with the result stated by Mr. Ford. The balance of the month the mill was run on Michigan company's rock, with satisfactory amount of bullion. The report is not yet out.

At the Grayling work with the diamond drill has been stopped by the ground caving on the rods and bit.

The middle of the past week a thaw set in which has continued steadily, reducing the snow, so that the bulk has now disappeared.

The outlook for a large amount of exploratory work during the coming summer is very good.

It is to be hoped that parties with push and grit will get hold of new properties and develop them as they should be developed. "L."

HOUGHTON, Mich., April 7, 1890.

The Duty on Lead in Ore.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: In the extract from the Ways and Means Committee's new Tariff Bill, which was published in the last issue of the JOURNAL, I find our old friends, of uncertain identity, "Lead Ore" and "Silver Ore," cropping out again as follows:

"LEAD.

"Lead ore and lead dross, 1¼ cents per pound: *provided*, that silver ore containing lead shall pay a duty of 1¼ cents per pound on the lead contained therein, according to sample and assay at port of entry."

It was to be hoped that the discussions before the Secretary of the Treasury, together with all that has been said and written upon the subject of the importation of lead in ore, would have resulted in a little clearer comprehension of the nature of the question at issue on the part of our law framers. But, instead of recognizing the great objection to the terms "lead ore" and "silver ore" without specially defining what is meant by these terms, they seem to be bent upon complicating matters still further.

For, as the proposed law now reads, an ore carrying, for example 30 per cent. of lead (600 pounds per ton) must pay a duty of $30 per ton if it be called lead ore, and but $9 per ton if it be called silver ore. That is to say, the same amount of lead must pay a duty of 5 cents per pound, or 1¼ cents per pound, according to the amount of silver the ore contains. *Silver*, therefore, is the basis for determining the duty on *lead*. Surely the ways and means of our Ways and Means Committee are past finding out.

Inasmuch as lead is the *bête noir* in this controversy, it would seem that if, in the opinion of our law-makers, the good of the country demands a duty on lead, the simplest way out of their difficulty is to place a duty on *lead*, whether it is contained in lead ore, silver ore, silver-lead ore, gold ore, iron ore or any kind of ore. They have excellent precedents in the cases of copper and nickel, where a specific duty is placed upon copper *in* ore and nickel *in* ore, the *kind* of ore not being stated, and therefore referring to *all* ores. Hence, if the law is made to read, "Lead *in* ore and lead dross, 1¼ cents per pound," the difficulty is solved; at least, so far as defining *what* is to be taxed.

32 LIBERTY STREET, New York, April 10, 1890. W. DE L. BENEDICT.

Thermic Nomenclature.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: I would begin this communication by first thanking your highly competent correspondent from the Pacific coast, Mr. C. F. Torrance, for his kind consideration in your last issue of my suggestions. His own ideas are certainly worthy of more study and thought than I can give just at the present time, through pressure of imperative duties. I shall, however, submit to your columns, at the earliest date I can, a response, or rather a sequence, to the views of Mr. Torrance.

In the meantime it happens that I have already made some new memoranda in continuation of the general subject of nomenclature in thermics, one of which, as amendatory, in an important respect of my previous suggestions, I would—with your concurrence—take this opportunity to bring forward.

This I am encouraged to do by the evidence of the import of this matter, recognized and presented by Mr. Torrance. I feel that I can now deem it probable that more among the students of thermic science may accept suggestions of the kind I have presented as not altogether idle or futile. Hence I am led to hope that general attention may be drawn before long to the subject.

The special memorandum I refer to relates mainly to the term I proposed (in your issues of December 14th, 1889, p. 524, and December 21st, 1889, p. 547) for the so-called "specific heats," or times of equal increments of thermometric temperature. My proposed term was *Temp*, a contraction of either time (in the Latin) or temperature, or (as a useful incident) of both these words. This, so far, is unobjectionable; but, as it comes to be further developed (on p. 547) into compound terms, representing its differing applications to equal weights and equal volumes, we got the terms *barotemps* and *stereotemps*. These, on revision, I observe to be hybrid (Greek + Latin) words, and therefore certainly objectionable to etymologists.

I now suggest further, therefore, that, instead of *Temp*, we may use *Chron* (χρόνος, time) to indicate the specific heat; whence we will then get *barochron* and *stereochron*. For the "atomic heat," which I before called the *equitemp*, we can then have the term *isochron*. This latter may, so far as I know, have been before suggested in some other sense (we have, for example, *isochronous* as a common adjective). This, however, does not seem to me hostile to the special use in thermics that I propose. The Greek ἰσος does not imply merely equality in number, dimensions, or weight, but also equality in strength, power, energy, etc.

Still another change is, in this case, needed in another of my compound terms, namely in that for the heat, or total *cals* generated by the combustion of the equivalent weight (or equivalent volume), which I designated as the *equipyr*. This, by the present new suggestion, becomes the *isopyr*. If terms still more descriptive should be deemed desirable, we might use *isokratochron* and *isokratopyr*, which bring in κράτος, force, power. These, however, probably introduce needless complexity.

HENRY WURTZ, PH.D.

2142 SEVENTH AVE., New York, April 10, 1890.

Recent Economic Changes.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: In reading your editorial review of Dr. Wells' "Recent Economic Changes," I was struck by your omission of metals from the articles which may experience a reaction in value by reason of the exhaustion which cheap production is liable to bring about. I know you have held and argued that price regulates consumption, and that when a metal reaches an inordinate price, a cheaper substitute is sure to be found, whereupon the demand for the dearer metal slackens and the price sympathizes by a corresponding decline. But there are metals that are so essential for certain purposes, that no substitute is likely to be found, and as a general rule, what is true of the, so to speak, regenerative products of nature, must be doubly true of her non-regenerative or mineral products.

The whole industrial world is using up the common metals at a prodigious rate. Already we see signs of decadence in some sections of the older iron regions, such as those of Bilbao and Marquette—regions old only as time is computed in our modern industrial calendar, where the short span of a human life is a long measure as applied to that of an industrial enterprise. New sources of iron are discovered at home more rapidly than old are exhausted, but the period of rapid discovery must of necessity be short, while the period of consumption is long, limited only by the life of the race. Had cheap methods of making steel, with its greater durability, not been discovered, and the growth of railroads been as vigorous as it is, the consumption of iron (for new rails and the replacement of old) would have been ominously great. It will probably be true that still stronger alloys of iron than steel will still further preserve the life of that invaluable metal; but no one can watch the ever growing demand for iron for old and for new purposes without concluding that the day is not many generations off when, if iron does not become scarce, the largest mines will be so far from the centers of greatest consumption that the price of the metal and its alloys will be dearer than now, despite ever cheaper methods of reduction and manufacture and transportation, than we now practice.

And the same is still more notably true of copper. Many of our older copper merchants can recall the day when England occupied a prominent place as a copper producer, and when Chili became famous by her sudden pre-eminence as the world's source of that metal. Now England's scanty yield is hardly worth noting, and Chili's product has declined to far less than half her maximum yield. We have changed places with Chili, but a generation hence, if we force our mines to their utmost yield, big as our mines are, and vast the domain over which they are scattered, Chili's experience may be repeated in our own. There is abundance of low-grade ore in Chili, which, when a higher price is reached, will be converted into metal. So there is in our own land; an actual dearth of copper is not likely to occur, but permanently such low prices are not likely to prevail, as the recent development of a number of large mines here and elsewhere and the rapid marketing of their rich surface ores have entailed. Steam and electricity made possible this sudden recovery at a low price of copper from certain heretofore inaccessible mines, but steam and electricity cannot return the ore to the empty veins. They will cheapen the production of the metal so as to allow poorer and poorer ores to be used as the richer are exhausted; but that they will be so efficacious in reducing cost of production as to make copper cheaper from poor than from rich ores, is more than unlikely. Copper fills its own place in the arts, and when it is used for inferior purposes because it happens to be cheap, it is to all intents and purposes wasted. To use a metal so valuable for its high electrical conductivity, and for its exquisite artistic qualities, instead of iron, to roof buildings with, is misusing it, and its comparative scarcity will soon assert itself, and by raising its price resent its degradation. Of copper there is enough in the world for all the purposes to which copper is essential, but not enough to allow of its being long used recklessly as one of the inferior metals. It will protect itself by maintaining its true value, which is not the low value to which it accidentally fell.

The same is true of another of nature's most beneficent products, petroleum. As an illuminant it has been an incalculable blessing to mankind, affecting deeply the social and intellectual life of a very large stratum of society. The supply is large, and yet without doubt limited. We have tapped it without stint, and are rapidly exhausting our most available supply. If Baku and Burmese petroleum drive ours out of certain markets, we should be thankful, for it leaves so much the more as the inheritance of our children, who will certainly have to pay more for it than we do. As long as we use it as an illuminant, even if not over careful of it, or of our eyes, we put it to a legitimate use, but when we come to apply it to generating steam, or reducing ores, we wickedly waste it. Happily, our most ingenious contrivances for robbing nature of her treasures, will not long keep petroleum cheap enough to allow of such perversion.

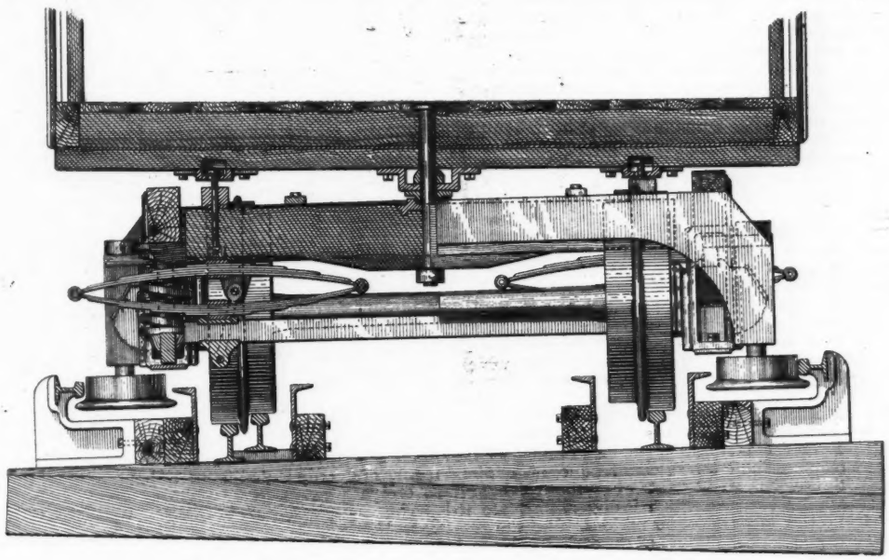


FIG. 1.—SAFETY AND ANTI-FRICTION DEVICE FOR CURVES.

For our wanton waste of coal, especially anthracite, as well as of petroleum, we will sooner or later be punished by higher prices. But this very waste and its consequences are attributable to the agencies which Dr. Wells considers will entail permanently low prices.

I agree most heartily with your argument and its conclusions, but would push its consequences further than you do yourself, and further far than your avowed principles would allow you to go—even so far as to advocate State interference where human cupidity is wasting the bountiful but not inexhaustible resources of nature. We individually are selfish and short-sighted, and when tempted will kill the goose for the golden egg; but we hope our government is immortal, and therefore it is within its province and one of its most sacred functions to protect the means of subsistence of the future generations of its citizens, to watch lest in its greedy grasping after rapid wealth any one generation waste the heritage of the ages and destroy aught on which the future prosperity and progress of the people may depend.

CONSERVATOR.

SAFETY AND ANTI-FRICTION DEVICE FOR RAILROAD CURVES.

We illustrate herewith the device recently patented by John H. Pendleton and Andrew Bryson, Jr., of New York, for the purpose of reducing friction on railway curves, to which we referred in our issue of last week on the subject of "Greater Carrying Capacity for the Brooklyn Bridge."

It consists of the ordinary four-wheel truck, as shown in Figs. 1 and 2, each wheel of which has bolted or otherwise firmly secured to its inner face a supplementary tread, as shown in Figs. 3 and 4. The truck also carries four additional wheels, called guard wheels, which are journaled vertically and attached to the corners of the truck, or to projection of the axle boxes.

The diameter of the inner supplementary tread is smaller than that of the outer or regular tread in the ratio of the radius of the inner rail on the curved track is to that of the outer rail. When the car goes round a curve, the outer tread rests on the rail on the outer or longer rail of the curve, as is the case with ordinary car trucks, but the inner tread rests on the inner rail. The car thus has a normal tendency to run in a curve, just as a cone rolls in a curved path on a level floor, and the friction due to the slipping of the wheels on the track, which is inevitable in the ordinary truck when running on a curve, is avoided.

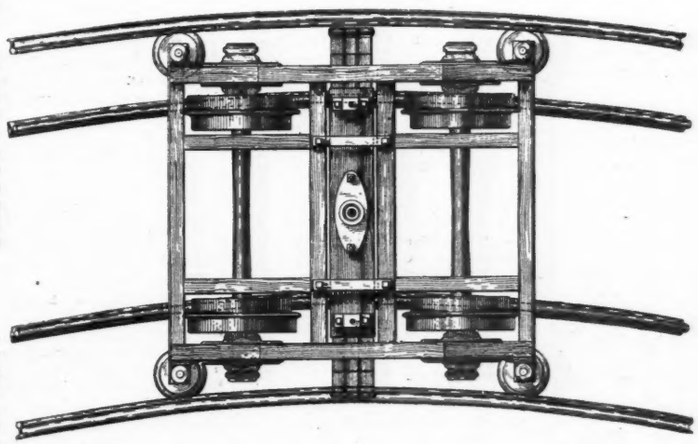
To facilitate the passage from a tangent to a curve, and in so doing to change the bearing of the truck on the inner side of the curve from the outer to the inner tread of the wheel, the shorter or inner portion of the curved track consists of a rail distinct from the rail of the straight portion, and slightly out of alignment with, and extending for a short distance alongside of, it. This is shown in Fig. 1, where, on the left hand side, the two rails are shown at the point where their ends overlap. The overlapping ends of the straight and curved portions of the track are curved downward, so as to enable the compound tread wheels to roll from one to the other without jar.

In Fig. 2, the truck having entered on the curve past the point where the rails overlap, the inner treads are seen resting on the inner rail, and the outer treads of the opposite wheels on the outer rail.

The safety device, to prevent derailing, and to prevent the friction of the wheel flanges on the rails in passing round sharp curves, is shown clearly in Figs. 1 and 2 to consist of horizontal wheels which roll against horizontally placed guard rails. An angle plate, firmly bolted to a longitudinal timber, near the main track, overlaps the wide flange of the guard wheel, and this flange, thus overlapped by both the guard rail and the angle plate, renders derailment impossible.

The device would appear to be especially valuable for elevated railroads, which have many very sharp curves, as well as for the proposed Brooklyn Bridge railroad terminus, which we illustrated last week.

Fig. 2.



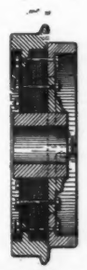


Fig. 3.

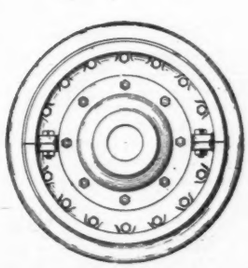


Fig. 4.

SAFETY AND ANTI-FRICTION DEVICE FOR CURVES.

THE WEALTH OF MOROCCO.

Written for the Engineering and Mining Journal by O. H. Howarth, M. E.

The forward step of civilization is increasing its pace so rapidly in these latter days that one can hardly call it premature to take some notice of a country in which the mineral wealth at this moment belongs absolutely to the future. For ages past the world has been full of indefinite stories as to the fabulous riches of the Moorish monarchs, and has perhaps learned to regard them as more fabulous than real. The actual facts, however, in regard to the Empire of Morocco are very easily told. The Sultan himself, together with certain other individuals whose names could almost be counted on the fingers of one hand, are undoubtedly possessed of what may be very literally described as "untold wealth." But the relation of this wealth to the country itself is very commonly

misunderstood. That relation is revealed in a few words when it is stated that the currency of the empire consists almost exclusively of Spanish dollars and French five-franc pieces, passing at equal value. It may well be a puzzle to the casual observer how a nation so completely shut out from general commerce with the world became possessed of millions upon millions of these coins, and still more so how, in these days, it has contrived to keep them. But such is the fact, and without going further into historic details I may mention that it is mainly due to the extraordinary hoardings of the few wealthy men in the country during several centuries past. It is a temptation to record here some of the incidents which came to my knowledge in a recent expedition to the city of Morocco in reference to these amazing accumulations of silver coin, even at the risk of being held responsible for "travelers' tales," which smack of Aladdin's Lamp. My present purpose, however, is merely to indicate that these localized masses of imported treasure have no bearing whatever upon the mineral resource of Morocco itself. The process of their formation is entirely abnormal, and can only be compared to the crystallizing process in an ore vein, where, for ages, the metal has been slowly passing in, and nothing passing out. I was credibly informed two years ago that on the occasion of a visit of the present Sultan to an old palace at Rubat, on the Atlantic coast, a *caché* of not less than ninety millions of dollars was unearthed, said to have been amassed by the autocrat's grandfather. It may seem incredible to any one who has not had some acquaintance with the internal economy of this strange land that the memory of such a hoard could have been utterly lost in two generations. But there are means in Morocco by which such knowledge can be obliterated in two minutes, and it is enough to say that, knowing the possibility, one can accept the story without hesitation. Every such incident adds something to the evidence that the reputed and actual wealth of Morocco came originally across the seas, and not from its own soil.

But, passing from the evidences of history to those of nature, we may learn that Morocco owns a potential wealth as yet untouched. The wondrous range of the Great Atlas, a romantic chain in many respects almost unique in the world, represents a series of igneous rocks extending for several hundreds of miles, and including metalliferous deposits which, in civilized hands, might have proved a bonanza to the country possessing them. Here and there, in a shame-faced and conscience-stricken fashion the Sultan's emissaries have raked up a little lead and silver, or smelted a bit of antimony; but this sacrilege has been committed only under the sort of special dispensation supposed to be afforded by the despot's command. The Mohammedan creed discountenances the interference of human hands with the component strata of mother earth, and forbids the avaricious search for treasure which it does not hestate to hoard up when derived from the labor of other nations. But the geological survey of Morocco is one of the inevitables of the early future, and my line of travel from the foothills of the Great Atlas, northward through the province of Donkala, afforded a glimpse of its possible results.

The northwest coast of Africa represents, in part, the outskirts of the great volcanic zone indicated by the island groups of the Canaries, Madeiras, and Azores. This is shown along the coast-line by the water raised from the enormously deep wells, which in many districts are the only source of water for all purposes, and in which the sulphurous tinge is generally more or less perceptible. It is on the flanks of such volcanic disturbance that the intrusion of mineral veins usually occurs; and in western Morocco this is developed on a broad scale. The Atlas range, running eastward from the coast, is a natural barrier which, together with the ocean, has done much to maintain the seclusion of the Moorish people, while at the same time it incloses a country of great mineralogical interest. While traversing the plain of Morocco—that is, the plateau about sixty miles in width, upon which the capital is situated—I found an extensive outcrop of slates with the bed raised into a nearly vertical position, and showing quartz veins beautifully interlaced with acicular crystals of tourmaline. The presence of the tourmaline in these veins seemed to be an invariable indication of the absence of metallic constituents; and conversely, the disappearance of the tourmaline as the mountains are approached is followed by the substitution of galena and silver sulphides in the veins. Parallel with the main chain are two other ranges, that to the south being known as Anti-Atlas, and being the north boundary of the Sahara Desert, and that to the north being called El Djebilet. The latter range is of the nature of a trap-dyke; and on crossing it I descended into a plain which stretches a hundred miles northward, and includes a large part of the Donkola province. The siliceous veins along the first few miles of this level had a tendency to assume the chalcedony form, which is so marked a characteristic of the province of Haha, further south. But succeeding these there followed a series of altered slates merging into a hard clay highly charged with iron. As is commonly the case on receding from a great mountain range of older igneous rocks, I found here an overlying tertiary series, among which by far the most interesting feature was the magnificent development of hematite irons. On pursuing the track over the indurated clays—there is nothing, by the way, in the whole empire of Morocco which merits the name of a "road"—the surface appearances became at every mile more distinctly ferruginous. Strange to say, there seemed to have been in this district a wholly exceptional effort at road-mending; and for this purpose several piles of unbroken float rock had been collected on the track-side, at successive points. On dismounting to examine one of these which attracted me by its appearance, I found it to consist almost entirely of specimens of kidney hematite which would have graced any mining museum. A few miles on my right, a range of hills rose to a height of about a thousand feet, crowned by an ancient and mined Portuguese fortress known as Durando; and it needed but an easy effort of imagination to see the unlimited iron treasure of these hills mined at almost any point by level drifts and delivered direct to a plain, which seemed to have been graded by nature for an easy line of communication to the coast, about fifty miles distant. The value of such a source of supply almost at the doors of the European markets can be imagined, and adds to the singularity of the fact that the grand obstacle of Moorish obstructiveness has been able to hold its own so long.

With the exception of a few ancient coins of former Moorish dynasties (some of which I obtained, and subsequently learned from the authorities of the British Museum that they were upward of 800 years old), the only home-mined silver in Morocco is found in the form of the massive bracelets, anklets and other ornaments, which, with some trouble, may occasionally be purchased from their owners. On examining a pair of these bracelets (the weight of which was over three pounds apiece), I found them to be of a very dirty silver, far below any civilized standard, and probably obtained by the rudest and most primitive operations of refining. The chief interest attached to them was their undoubted extraction from a low grade and leady black ore from the Atlas, of which some specimens were shown me. It is probable that all this bullion, both in early and modern times, had been derived from a mere outcrop, the natives hesitating, as already described, to indulge in any actual mining operations, from superstitious motives. The Atlas range also produces gold, both from a quartz matrix and from sand washings, though it cannot always be determined whether the gold used in the country is from these sources, or imported across the Great Desert by the caravans from the more central regions of Africa. An attempt was made within the reign of the present Emperor to introduce a gold coinage, and plenty of gold was forthcoming for the purpose; but inasmuch as the five or ten dollar pieces were stamped out of nearly pure metal, without reference to the exchange value with other countries, it was no matter of surprise that the gold currency disappeared as fast as it was minted, being worth from 20 to 30 per cent. more than nominal value the moment it got across the Straits of Gibraltar. It did not come within the lines of Moorish policy to regulate this absurdity, and so the mint was speedily shut down, and the country continued to subsist on French and Spanish silver.

Although the Great Atlas and its eastern expansion into the Riff Mountains form a natural boundary to the empire of Morocco, the dominions of the Sultan extend nominally far beyond these limits, both to the east and south; and it is chiefly outside the range of his native government (Heaven save the mark!) that anything has become known as to the mineral resources of these regions. The Riff Mountains cover a large tract of wild country tending northward and meeting the Mediterranean coast between Morocco and Algeria. The emperor's rule in this district is a mere farce, and the Riffians own no allegiance to it, unless when their necks are under the axe—and not always then. But it is a land rich in antimony and the commonly associated ore: and by hook or crook explorations have been made at intervals by adventurous travelers, whose labors will meet their reward when Morocco is awakened from the sleep of centuries. To the credit of the present Emperor, however, I must add that he has personally a keen disposition towards enlightenment, and only submits to a hapless fate in being a Mohammedan sovereign.

NEW MECHANICAL AIR VALVE GEAR.

As is well known, valves of the ordinary poppet form chatter more or less, and to reduce this as much as possible it is usual to give them a small lift, making up the required area of passageway by putting in additional valves. The device illustrated below stops the chattering, and hence allows the valves to have a full lift, and get the full passageway due to their area, thus making one valve the equivalent of seven or eight of the usual kind. This is a new valve movement of the Rand Drill Company for air compression cylinders, of which the following is a description.

A is a sliding bar, driven by the main steam valve stem in the class *A* and *B* compressors, by the Corliss wrist plate in the Corliss engine compressors, and by an eccentric in water power compressors. Arms *a*, *b*, *a'*, *b'*, are keyed to the bar. In the position shown, arm *a* has engaged the washer *i* and moved it to the left, away from the nuts *j*, thus releasing valve *g* from the pressure of the spring *c*. Similarly arm *b'*; through rod *e'* and tube *f'*, has released valve *h'* from the pressure of its spring. The two valves are thus at liberty to open wide and stay there. At the proper moment the springs are relaxed, and as the crank passes the center the valves close. The most peculiar and remarkable feature of the device is that it fulfills perfectly the varied requirements of the discharge valves without any additional mechanism whatever. The movement of bar *A* is so timed that the discharge valve spring is lifted before the valve is ever wanted to open, the pressure of the air upon the valve (aggregating from 500 to 1,000 pounds) being ample to hold the valve to its seat. The spring being relaxed, whenever the pressure in the cylinder equals the pressure in the receiver, no matter what that may be, the valve is ready to open, and does open widely and freely. When the complex valve gears that have been proposed to meet this condition are considered in comparison with this, no one can fail to be struck with the ingenuity which here meets such difficult conditions by such plain and simple means. One peculiar feature of the inlet valve movement will not fail to attract attention. The movement of bar *A* is so timed that the compression of the inlet spring occurs some time before the piston reaches the end of its stroke, consequently when the piston commences its return stroke, the spring being already compressed, the valve is at liberty to go wide open *at once*, instead of waiting for the slow movement due to an eccentric, as is the case with the absolutely positive movements.

As will be seen, the inlet valve is provided with a guard, and, to lessen the clearance which exists between the valve and the guard of the usual form, the valve is here made hat-shaped, as will be understood from the illustration. The clearance due to this form of valve is two-tenths of one per cent., which is much less than with the usual form of valve with guard, and the discharge valve stems are provided with a safeguard to prevent their getting into the cylinder in case of breakage. This is not shown in the engraving, owing to the small scale on which it is necessarily drawn.

DRY LUBRICANTS.

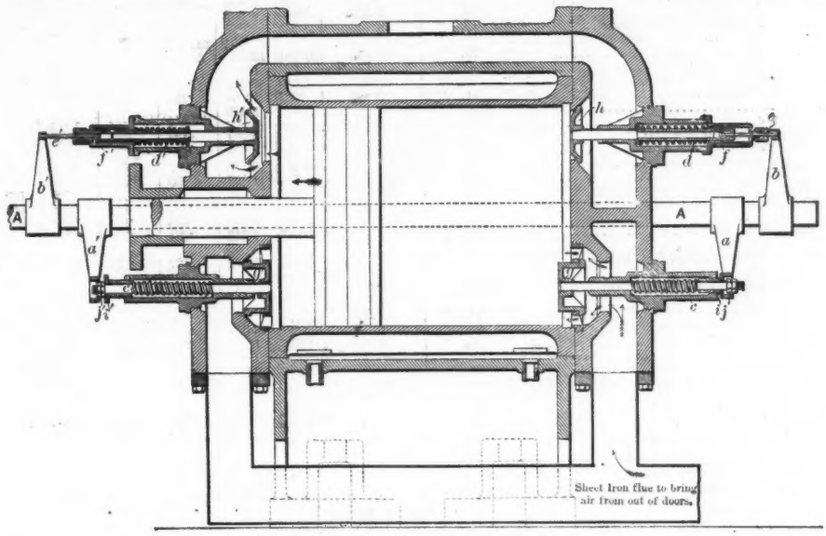
The use of dry lubricants as a means of correcting difficulties arising from externally heated bearings, or in such places as actually come in contact with fire, is becoming better understood, but that graphite, in one shape or another, has been in successful operation for a period of years, and in almost every department of manufacturing, is far from being generally known. The principal firms engaged in its manufacture are doing a steadily increasing business for nearly every class

of machinery and running gear, which tends to show that graphite is gradually taking its well-earned place in the confidence of the manufacturing community.

All manufacturers have had experience with what may be termed wet lubricants, but in proportion to the many, only few have given dry lubricants a trial. When matters are not running very smoothly with ordinary machinery, there is a strong tendency with the man in charge to seek his friend the "oil-can." He seldom reasons that perhaps the slight loosening or setting of a journal would answer the purpose much better! No, it is less trouble to "oil up," and in doing so unwarranted waste comes in. Many of our readers have doubtless gone through the experience of bad "lining-up," and the consequent destruction of shafting and journals, likewise the difficulty of placing the blame on the proper cause when examining journals that are messed-up and clogged with oily matter. With a dry lubricant this cannot happen, as on examination of a journal a clean surface is exposed, and the "pinched" part at once detected. The advocates of wet lubricants say "that dry journals are all very well when adapted to ordinary line shafting not exceeding a speed of 250 revolutions and that they are not to be depended on at any such speed as 1000." And yet there is no doubt that different descriptions of dry journals have given perfect satisfaction when running as high as 2,000, 3,000 and 4,000 revolutions.

The wet-journal advocate again claims the advantage in first cost. The "Dry" answers by saying: "Yes, but we guarantee our work to run as long as yours under the same circumstances, and have the advantage of saving all further expense in oil and attention." We may here state that we find the excess of charge not very much greater over the ordinary brass or bronze metal bearing, and in the case of Randolph Shafting Trust, which has the advantage of using ordinary iron bushes as well as the finer metals, its price list is the same as for the ordinary Babbited journal.

It is also claimed that a dry journal cannot be used to advantage in rolling-stock bearings. We can say something here ourselves to the advantage of the graphite side, for we are in possession of the undoubted fact that the People's Railroad, of Syracuse, N. Y., has five cars fitted by the Phelps Car Gear Company, all having been supplied with bearings by the Graphite Lubricating Company, and one of which has covered upward of 13,600 miles and given every satisfaction.



RAND'S MECHANICAL AIR VALVE GEAR.

THE WATERS OF THE PASSAIC RIVER AND ITS TRIBUTARIES—THE SELF-PURIFICATION OF STREAMS.

By Henry Wurts, Ph. D., with the Assistance of Durand Woodman, B. Sc.*

(Continued from page 340.)

My first samples were collected on the 7th of September, 1881, and my last on the 7th of January 1882; thus covering a period of just four months. It has happened that the season, during this period, has been exceptionally favorable to such an investigation as this; a drought having occurred, the length and severity of which have rarely been paralleled. There was in fact no rainfall which contributed anything appreciable to the flow of your river or its tributaries, from an early day in July 1881, until the 29th of December. No ice, moreover, formed in the Passaic until about Jan. 3, 1882. Never before probably has there been such an opportunity to examine a question of river-pollution during so long a time, without disturbance of the uniformity and normality of the composition of the stream through natural agencies. This fact confers upon this work a value and importance in some respects wholly unique so far as known to me.

In the large tabulation in Table I, of all the analytical results, columns 1 to 6 scarcely call for any special explanation; columns 7 and 8 indicate respectively the amount of *chlorine* present, and the amount (equivalent to such chlorine) of *common salt*, the form in which it mainly exists in these waters; whether communicated thereto—as it really is in minute proportion—by the natural agency of rock springs and of rain carrying down traces of sea-spray blown inland†; or communicated far more copiously from artificial sources (as drainage through and from the bodies of men and animals). In the case of the samples collected from the tidal reach of the river, another source may supposably come in; that is, admixture with oceanic brine swept up with the rising tides. It will be apparent how important the figures in these two columns are to the objects of this investigation. Special care was, therefore, expended in obtaining them, by repeated operations, in which time, labor and expense were subordinated to the closest accuracy of results.

Column 9, contains a series of similarly careful and accurate figures for sulphuric oxide, SO^3, a constituent of which little note is frequently taken by sanitary analysts. For this special investigation, however, it happens to have—as will appear further on—an importance, in a way now pointed out for the first time, not less than any other constituent.

Column 10 shows the amount of ammonia, NH^3, *as such*, both free and combined as salts of ammonium.

Column 11 shows the ammonia derived from nitrogenized drainage-matters, called "albumenoid" matters by analysts.

Column 12 shows the ammonia equivalent to the nitric or NO^3 compounds (nitrates) together with nitrous or NO^2 compounds (nitrites) present in the water.

There is a close connection and interdependence between the constituents in Columns 10, 11 and 12. Hence the next column.

Column 13 is made up of the sums of the last three columns. This has not been the practice heretofore in stating results of water analysis; but the principle here applied is merely, in a less direct form, that of the method of Frankland, highly approved by many sanitary chemists; which consists, in part, in determining *directly* in the water the total amount of nitrogen present.

Column 14 is the same virtually as 13, instead of total ammonia, its equivalent in nitrogen being stated. Its chief object has been to enable us to compare these results with those obtained hitherto by others for total nitrogen, by the methods of Frankland, in other waters. For this purpose, I will here cite from the Reports of the British Rivers Pollution Commission, a few figures recomputed to the United States gallon, with some figures obtained from the Boston Cochituate water, by R. P. Nichols, of Boston, by Frankland's methods (see Table II.)

TABLE II.

Total nitrogen found in different water, per U. S. gallon, by Frankland's methods:

	Grain.
1. Pure spring waters, British, mean of 198 samples	·0076
2. Fresh rain waters " " 39 "	·0087
3. Pure deep well waters " " 157 "	·0105
4. Pure upland streams " " 195 "	·0187
5. Filtered Thames water, Lambeth Co., London, mean of 12 monthly tests in 1873	·0223
6. Unfiltered Thames water, Lambeth Co., 1873	·0443
7. Boston Hydrant water, mean of 22 samples, January to June, 1879	·0303

In passing, a few points of comparison with Column 14, Table I, may here be briefly noted:

The waters (Nos. 1, 33 and 46) in the reach above the falls at Paterson have been found almost up to the mark of the Boston (Cochituate) water.

The waters (Nos. 9, 19 and 41) of the Dundee canal make even a better showing than the Boston Cochituate.

The waters (Nos. 17, 24, 32 and 43) of the long 14-mile level of the Morris canal, which reaches to the head of Bloomfield plane, some four miles only from Newark, have proved freer from nitrogenous matters than British mountain streams.

The Croton water, during this long drought (Nos. 11, 27 and 39), has not been up to the mark of the Cochituate, or of that above your Paterson falls.

The waters of the tidal reach (Nos. 6, 7, 8, 20 and 42) have averaged, at ebb tide, about as large a proportion of total nitrogen as unpurified Thames water at London, England.

Below, these points, with numerous others, will come out in greater detail, and in many relations.

It is to be remarked that, with but one exception, all the samples of water collected for analysis were first placed—still hermetically sealed—in a cool, dark place for from ten to twenty days, or until settled, to perfect limpidity. They were then decanted free from all traces of sediment. The exception was No. 41, from the Dundee canal, taken Dec. 30th, during the great rainstorm which closed the drought, and from the

*Report to the Board of Alderman of the City of Paterson.

†Lake Hopatcong, in New Jersey, was found by me in 1873 to contain per gallon 0·166 grain, or 1 in 350,000, of common salt. The Rhine at Basel, Switzerland, fed by melting inland glaciers from high levels in the atmosphere contains 0·143 grains or 1 in 408,000.

TABLE I.

THIRD CHEMICAL INVESTIGATION OF THE PASSAIC WATERS, 1881-82.

[The figures, as stated, are in grains per U. S. gallon of 58,320 grains.]

1. Numbers.	2. LOCALITIES.	3. Dates.	4. Total Solid Contents.	5. Combustible and Volatile matters.	6. Ashes, or Mineral Contents.	7. Chlorine.	8. Common Salt corresponding to the Chlorine	9. Sulphuric Acid (anhydrous).	10. Ammonia (as such).	11. Ammonia, Albumenoid.	12. Ammonia from Nitrogen Acids.	13. Ammonia, Total.	14. Total Nitrogen in the Ammonia.
1.	Passaic R., above Falls (temperature of air, 100° F.)	Sept. 7, 1881.	4·934	·711	4·223	·173	·286	·521	·00248	·0053	·0187	·0264	·02174
2.	" Bleecker st., Paterson,) mixed with sewage, gas-liquor, etc.)	" 7, "	6 135	1·020	5,115	·200	·495	·340	·03558	·0166	·0233 ·0262	·0769	·0633
3.	" Broadway Bridge, Paterson	" 7, "	5·931	1·312	4·619	.....	.....	·382	·00190	·0088	·0187 ·0204	·0303	·0250
4.	" Dundee Lake, east end of dam	" 7, "	6·718	1·691	5·027	·311	·513	·784	·00175	0076	·0391	·0480	·0395
5.	" Iron Bridge, town of Passaic	" 7, "	6 339	·875	5·464	.....	.....	·574	·00510	·0064	·0117 ·0128 ·0146	·0246	·02058
6.	" County Drawbridge, Passaic, ebb tide	" 7, "	6·631	1·137	5·494	·398	·657	1·015	·00087	0064	·0414	·0487	·0401
7.	" Newark Water Works, dead low tide	" 8, "	7·220	1·575	5·645	·590	·924	·428	·00204	0088	·0408	·0516	·0425
8.	" Newark Water Works, half flood tide	" 8, "	46·382	6·415	39·967	20·072	33·125	2·719	·00146	0093	·0467	·0575	·0474
9.	" Dundee Canal; town of Passaic	" 9, "	6·275	1·312	4 963	·260	·429	·590	·00673	0070	·0280	·0357	·0294
10.	" Newark Hydrant, 462 Broad st	" 10, "	20·115	3·237	16·878	7·118	11·747	1·229	·00260	0093	·0254	·0373	·0307
11.	Croton R., New York Hydrant, 25 London terrace	" 12, "	3·872	·816	3·056	.....	.....	·535	·00525	0172	·0204	·0429	·0353
12.	Passaic R., 1 mile below Passaic Bridge, early flow of tide	" 15, "	6·240	1·108	5·132	.....	.....	1·059	.....	.....	.....	.....	.....
13.	" Fifth Avenue Bridge, Paterson	" 21, "	5·132	1·166	3·966	.....	.....	1·079	.....	.....	.....	.....	.....
14.	Saddle R., above Lodi	" 28, "	4·782	·933	3·849	.....	.....	·675	·00175	·0093	.....	.....	.....
15.	" below Lodi	" 28, "	15·047	1·867	13·180	.....	.....	5·7·6	·00642	·0181	.....	.....	.....
16.	Rahway R., West Branch, Milburn	" 22, "	6·788	1·049	5·739	·236	·390	·638	·00117	.....	·5832	.....	.....
17.	Morris Canal, long level, above Paterson	" 29, "	2·496	1·283	1·213	.....	.....	·419	none	·0047	·0093	·0140	·0115
18.	Passaic R., above Falls, mixture of 2 samples, 1 mile apart	" 29, "	mean of 2. 4·875	·991	m. of 2 3·884	.....	.....	·690	m. of 2 ·00851	m. of 2 ·0181	.....	.....	.....
19.	" Dundee Lake, at exit into the Canal	" 29, "	5·587	1·050	4 537	.....	.....	·691	·00467	·0093	·0146	·0286	·0235
20.	" Newark Water Works, three-quarters flood	Oct. 19, "	6·742	1·517	5·225	·513	·847	·450	·01050	·0117	·0297	·0519	·0428
21.	" Opposite Newark, dead low tide, mixed with sewage, etc	" 19, "	mean of 2. 64·152	10·264	m. of 2 53·888	m. of 2 29·283	m. of 2 48·326	3·852	m. of 2 ·03499	m. of 2 ·0233	m. of 2 ·0530	m. of 2 ·1113	m. of 2 ·0917
22.	" Newark Hydrant, 73 Roseville ave	" 20, "	9·145	2·333	6·812	.....	.....	1·148	·00904	·0088	·0874	1052	·0866
23.	" Hoboken Hydrant, 16 Hudson terrace	" 30, "	20·925	4·549	16·376	7·083	11·689	2·141	·00107	.....	·0373	.....	.....
24.	Morris Canal, long level, above Paterson	" 31, "	2·939	·933	2· 06	·121	·200	·427	·00058	·0047	·0093	·0146	·0120
25.	Passaic R., above Falls	Monday. " 31, "	4·969	1·400	3·569	.....	.....	·779	.....	.....	.....	.....	.....
26.	" Dundee Canal, Passaic	" 31, "	5·552	1·050	4·502	·306	·505	1·159	·00 10	·0086	·0443	.....	.....
27.	Croton R., New York Hydrant, 25 London terrace	" 31, "	3·295	1·021	2·274	·167	·276	·281	·00408	·0204	·0109	·0354	·0292
28.	Passaic R., Newark Water Works, extreme low tide	Nov. 1, "	6·928	1·633	5·295	·892	1·324	1 084	·02683	.....	·0338	.....	.....
29.	" Newark Hydrant, 462 Broad st	" 1, "	13·927	3·149	10·778	3·890	6·435	1 358	·00467	.....	·0350	.....	.....
30.	" Newark Hydrant, 73 Roseville ave	" 1, "	13·975	2·916	11·057	3·836	6·331	1·260	·01170	·0216	·0274	·0607	·0499
31.	" Newark Water Works, 15 minutes past flood	" 11, "	5·365	·991	4·374	.....	.....	·307	·00496	·0163	·0175	·0388	·0319
32.	Morris Canal, long level, above Paterson	" 14, "	4·182	1·167	3·015	·110	·181	·642	·00379	·0070	·0053	·0161	·0133
33.	Passaic R., above Falls	Monday a washing day. " 14, "	5·016	1·266	3·750	·075	·124	1·020	·00554	·0088	·0204	·0347	·0286
34.	" Race-Course Bridge, west end	" 14, "	5·873	1·557	4·316	·231	·381	1·048	·01021	·0350	·0321	·0773	·0637
35.	" Race-Course Bridge, east end	" 14, "	.....	.....	.....	.....	.....	.....	·01690	.....	·0088	.....	.....
36.	" Fifth Avenue Bridge, west end, 300 feet below	" 14, "	6·039	1·755	4·304	·167	·276	1·197	·01749	·0233	·0266	·0674	·0555
37.	" Newark Hydrant, D. L. & W. R. R. Station	" 15, "	on 4 gallons. 7·465	.....	.....	.....	.....	.....	·00292	·0134	·0204	·0367	·0302
38.	" Hoboken Hydrant	" 16, "	on 4 gallons. 7·316	.....	.....	.....	.....	.....	·00233	·0128	.....	.....	.....
39.	Croton R., New York Hydrant, 25 London terrace	Dec. 19, "	5·476	1·487	3·989	·075	·124	1·046	·00583	·0175	·0222	·0455	·0375
40.	Passaic R., Newark Hydrant, 462 Broad st	" 29, "	5·762	1·371	4·391	·340	·561	·612	·00540	·0117	·0146	·0317	·0261
41.	" Dundee Canal, Passaic	River in flood. " 30, "	6·777	3·674	3·103	·225	·371	·954	·00846	·0105	·0090	·0280	·0231
42.	" Newark Water Works, ebb tide	" 30, "	4·537	1·545	2·992	·077	·127	·321	·01283	·0187	·0233	·0548	·0445
43.	Morris Canal, long level, above Paterson	" 31, "	3·044	·874	2·170	·115	·190	·556	·00467	·0082	·0093	·0221	·0182
44.	Passaic R., above Falls, river in flood*	" 31, "	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
45.	" Broadway Bridge, east side of river	" 31, "	3 855	1·166	2·689	·052	·086	·936	·00438	·0169	·0169	·0382	·0315
46.	" above Falls, from under ice	Jan. 7, 1882.	4·794	1·458	3·336	·115	·190	1·003	·00642	·0169	·0239	·0472	·0389
47.	" Broadway Bridge, east side, from under ice	" 7, "	5·237	1·749	3·488	·173	·285	·977	·00410	*0181	·0219	·0441	·0363

* Sample entirely lost in transportation by express, bottle broken.

TABLE III.

From the River Above Passaic Falls.

2. Original Numbers.	3. DATES.	4. Total Solids.	5. Combustible and Volatile.	6. Ash.	7. Chlorine.	8. Common Salts.	9. Sulphuric Oxide.	10. Ammonia (as such.)	11. Ammonia (Albumenoid.)	12. Ammonia (from Nitrogen Acids.)	13. Ammonia Total.	14. Total Nitrogen.
1.	Sept. 7, 1881	4·934	·711	4 223	.....	·286	·521	·00248	·0053	·0187	·0264	·0217
18.	Sept. 29, 1881	4·875	·991	3·884	.....	....	·690	·00851	·0181	.....	.....	.....
25.	Oct. 31, 1881	4 969	1·400	3 569	.....	.....	·779	.....	.....	.....	.....	.....
33.	Nov. 14, 1881	5·016	1·263	3·753	.....	·124	1·020	·00554	·0088	·0204	·0347	·0286
44.	Dec. 31, 1881	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
46.	Jan. 7, 1882, river ice-bound	4·794	1·458	3·336	.....	·172	1·003	·00642	·016)	·0239	·0472	·0389
	Means	4·918	1·166	3·752	.....	·194	·802	0056	·0125	·0210	·0391	·0322

TABLE IV.

Between the Falls and Dundee Lake.

1 Original Numbers.	2. LOCALITIES.	3. Dates.	4. Total Solids.	5 Combustible and Volatile.	6. Ash.	7.	8. Common Salt.	9. Sulphuric Oxide SO3.	10. Ammonia (as such).	11. Ammonia Albumenoid.	12. Ammonia from Nitrogen Acids.	13. Ammonia Total.	14. Nitrogen Total.
2.	Bleecker street, from sewage stream	Sept. 7, 1881.	6·135	1·020	5·115	.....	·495	·340	·03·6	·0166	·0247	·0769	·0633
34.	West end of race track bridge, in sewage stream	Nov. 14, "	5·873	1·557	4·316	.....	·381	1·048	·0102	·0350	·0321	·0773	·0637
36.	West end of Fifth avenue bridge, in sewage stream	" "	6·059	1·755	4·304	.....	·276	1·197	·0175	·0233	·0266	·0674	·0555
35.	East end of race-track bridge	" "	.....	.....	.....	.....	.....	.....	·0169	.....	·0088	.....	.....
13.	Fifth avenue bridge	Sept. 21, "	5·132	1·166	3·966	.....	....	1·079	.....	.....	.....	.....	.....
3.	Broadway bridge	Sept. 7, "	5·931	1·312	4·619	.....	.....	·382	·0019	·0088	·0195	·0303	·0250
47.	Broadway bridge, river ice-bound	Jan. 7, 1882.	5·237	1·749	3·488	...	·285	·977	·0041	·0181	·0219	·0441	·0363
....	Means of the sewage stream, Nos. 2, 34, and 36	....	6·022	1·444	4·578	... .	·384	·862	·0211	·0250	·0278	·0739	·0579
	Means of Broadway bridge, Nos. 3 and 47	....	5·584	1·531	4·054	.....	·285	·680	·0030	·0135	·0207	·0372	·0307
....	Means of Table III., above Falls (repeated for comparison)	....	4·918	1·166	3·750	.....	·194	·802	·0056	·0125	·0210	·0391	·0322
	Net increase within Paterson City limits	....	·666	·365	·302	.....	·091	decrease.	decrease.	·0010	decrease.	·0011	·0010
45	Flooded river at Broadway bridge	Dec. 31, 1881.	3·855	1·166	2·689	... .	·086	·936	·0044	·0169	·0169	·0382	·0315
....	Means of all Broadway bridge, Nos. 3, 47, and 45	.....	5·008	1·409	3·600	.....	·285	·763	·0035	·0146	·0194	·0375	·0309

river when in incipient flood. The opaline matter suspended in this partly rose, instead of sinking, and its separation required so much time that it had to be omitted in the case of the figures in columns 4, 5 and 6. The other figures were from the clear water. The high figure in column 5, is, however, useful as proving that in the beginning at least of such river-floods the suspended matter is mainly organic (doubtless vegetable).

STUDIES OF THE ANALYSES.

In my study of this mass of analytical figures, one mode adopted has been the construction of minor tabulations, relating to localities or points in the flow of the river, in conjunction with arrangements in chronological order. These will now be presented and discussed.

A. THE RIVER ABOVE THE PASSAIC FALLS.

Here the river is, of course, uninfluenced by drainage from Paterson. A few interesting facts come out, even from these few figures. The most marked is a distinct progressive increase in the figures in several of the columns, during progress of the drought (see columns 4, 5, 9, 12 and 14). But in columns 6 and 8 there is a decrease (it must be remembered that the drought closed Dec. 29th). The reason of this increase is obvious enough, through a progressive concentration of the water; but why the decrease in common salt and total mineral constituents? The main source of common salt being drainage of animal origin, we may suppose that a progressive desiccation of the soil in depth led to an increasing absorption and retention of such salt, as well as of other soluble mineral salts.

B. THE RIVER BETWEEN PASSAIC FALLS AND DUNDEE LAKE. THE SELF-PURIFYING WORK OF THE PASSAIC.

The next tabulation, Table IV., is one of high importance and interest. It covers samples taken at different places and dates, between the outlets of your large sewers at the Straight street bridge and the Broadway bridge below, a distance along the tortuous semicircular sweep of the stream of some 4½ miles, though in a direct line but about 2¾ miles. From the Straight street bridge, for about two miles below, to the Race Track bridge, the flow is sluggish, and a narrow sewage-laden stripe of the current closely hugs the right-hand bank in a very curious way, the other side of the river bottom being densely overgrown with water weeds. Below the Race Track bridge for more than half a mile the current is rapid and usually rippling, diffusing the sewage all across the bottom.

The weed bed also here spreads all across, and the water is thus filtered through this half-mile of dense and matted vegetation, feeding both the weeds and vast colonies of crustaceans and mollusks which swarm throughout them. Much below these rapids, and even all around the Dundee lake below, shallow margins still show the weeds under water. Columns 13 and 14 of Table IV. bring out quite satisfactorily the purifying action here of aëration in this alkaline river water, together with that of the plant and animal life. Thus, compare the total N in the three sewage-stream samples, 2, 34 and 26 = ·0579 in the mean; with the three from the Broadway bridge, 3, 45 and 47 = ·0309 in the mean, showing a large loss of putrescible nitrogenous matters. This diminution is not due to mere dilution of the sewage-stream throughout the whole river, as is shown by comparison with Table III. There, three N-figures above the falls, before receiving the sewage, give a mean of ·0322, even a little more than at the Broadway bridge. We are forced to admit, therefore, that this flow of 4½ miles from the mouths of the sewers has actually destroyed the total animal and animalized matter introduced by the drainage of the 50,000 inhabitants of Paterson. Moreover, the greater part of this effect appears due to the last 2¾ miles of such current.

Further, the same surprising phenomenon is shown under winter conditions of the stream; as seen by comparison of No. 46 Table III., and No. 47 Table IV., both of January 7th, 1882, with the stream frozen and somewhat swollen—No. 46, above the Falls, yielding ·0389 of total N. and 47, at Broadway bridge ·0363; a proportionate reduction even twice as large as before.

(TO BE CONTINUED.)

A POCKET MAPPING INSTRUMENT.*

By Alfred C. Lane.

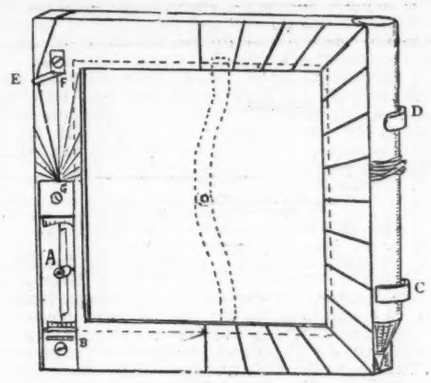
What with compass, notebook and pencil, one hammer or possibly two, map, lunch and collecting bag, and perhaps barometer, the field geologist is apt to realize too forcibly the meaning of the Lotin term "impedimenta." The little instrument I have to describe, which in default of a better word we might call a "geograph," has proved a handy consolidation of some of these instruments.

It consists of a frame (see figure†) like a picture frame with a removable back held in place by the spring shown in dotted line, as in a photographic printing frame. This frame is of any suitable size. The one I have been using is 5½ x 7 inches, outside measurement, and will cover a couple of land sections with a broad margin, at a scale of 2 inches to one mile. A larger one would be in many ways more convenient, but this just slips into my pocket. At the lower left-hand corner is an oblong compass box (*A*) with width enough to allow for a magnetic variation of several degrees and a stop (*B*) to lift the needle up when not in use.

The right-hand side has a semi-circular groove, and from the back of the frame curve forward two strips of elastic brass, (*C*) and (*D*), *D* forming a trifle over a quadrant, *C* very nearly a semi-circle. The pencil is thrust through *C* and then pressed into *D*. A small rubber band is twisted three or four times around the pencil, which increases of course the pressure needful to press it into place, and prevents it falling out or rattling. I have never lost a pencil from the holder.

Above the compass on the left-hand side is a sun-dial for determining true north, when the time o' day is known or vice versa—for regions of local attraction indispensable. From a small hole in the frame at *G* an elastic cord runs through a hole or notch near the top of a movable arm *E* which is hinged at *F*, and hence over the top of the frame in a slight groove to the back, where it is fastened. When the arm *E* is erect, the $< E\,G\,F$ should equal the latitude. Adjustment for different latitudes could be made both by a series of notches in the arm *E* and by having the base *F* adjustable so as to slide to and from *G*.

When not in use the arm *E* folds down, the cord contracts out of the way and nothing dangles as in the dial compass. But if *F* or *E* be



changed the graduation of the dial must also be changed. If *H* is the number of hours before or after noon, *P* the point where at that time the shadow of the cord crosses the edge of the frame, *m* the projection of *P* on *F G*, we find $mG - Pm$ is fixed—by the formula $\frac{mG}{Pm} = \frac{cot\ H}{sin\ lat.}$

If it might be necessary to change the adjustment on a journey when tables are not at hand these two thumb-nail tables might be written on the back of the frame:

P	*M*	*A*	*M cot. H.*
12	12	∞	
1	11	3.732	
2	10	1.732	
3	9	1.000	
4	8	0.577	
5	7	0.268	
6	6	0.000	

To find latitude—if latitude $= \lambda^\circ = c^\circ + \sigma^\circ$ where σ is small—we have $\sin \lambda = \sin (c^\circ + \sigma^\circ) = \sin c + \frac{\sigma^\circ}{60} \cos c - \frac{\sigma^2 \sin c}{7200}$; if we let $c = 36^\circ\ 50'$, $\sin c = .6$ $\cos c = .8$; and for the United States σ will be small and this formula nearly true:

$$\text{Sin lat} = \frac{6}{10} + \frac{4(\lambda - 36^\circ\ 50')}{300} \left[\frac{(\lambda - 36^\circ\ 50')^2}{12000} \right]$$

Only the first two terms need be used.

The frame is further marked with heavy lines in front to indicate the courses which are most used by woodsmen and are easily platted with coördinate paper, as given in the table below.

The figures show graduation only on one side of the frame, but it is best to have it run all around.

On the back of the "geograph" is a simple clinometer—a weighted string fastened on the pencil side. There is a protractor scale on the back about the point of fixture, and the pointed weight is shoved into a slot when not in use. A couple of small spirit levels set at right angles into the frame would improve it.

The geograph may be used in two ways. First, with coördinate paper, in the usual fashion of woodsmen. The side of the geograph being brought to point north, the rulings of the sheet of coördinate paper cut to fit the frame run the same way. The course which we wish to go being picked out from those marked on the frame, a sight is taken over and along it and pursued. Having gone that way as far as we want, preferably some number of paces which stands in a simple ratio to that number in the first column (of the table below) which is in the same horizontal row with the chosen course, we can easily plat it from some chosen point, and thus continue. Several sheets of coördinate paper are always kept in the frame in case our course should lead us off the first one. At each stop we can fill in the topography accurately as the sheet and the country lie before us in the same position.

TABLE OF COURSES.

A run of	on a course	will carry	and further	
	N. E.	as N.	E.	
103. + .07	14° + 3	100	25	76° − 3′
316. + .20	18° + 25′	300	100	72° − 25′
111. − .20	27° − 26′	100	50	62° + 26′
360. + .53	34° − 19′	300	200	56° + 19′
125. − .00	37° − 8′	100	75	53° − 8′
141. + .42	45°	100	100	45°
Paces		E.	N.	N. E.

This table should be memorized or written on the back of the geograph.

Or, secondly, it may be used as a plane table, a strip of stiff colored card with a graduated edge or even a pencil serving for an alidade. Point the card in the direction to be determined (keeping the side of the geograph pointing N.) and draw a line along it.

There are some other incidental points. If you have your maps cut up nd mounted on linen to fit, they may be slipped in. It will save wear nd dirt and enable you to orient your map in a moment. Moreover, you an keep your course on the map, or on a sheet of tracing linen over it in

* From the *American Geologist*.

† The figure is drawn in crystallographic projection, with the thickness and breadth of frame increased out of proportion to show the construction better.

the frame. Whenever it is needful to make or finish a run in wet weather tracing linen or oiled paper can be slipped over the map or co-ordinate paper and the notes continued. It is not a bad idea to make blue prints of maps for field work, and for this the frame is useful.

Thinking that this geograph might be of use professionally to others than geologists—woodmen, explorers, prospectors, army engineers, etc., I have taken steps to have it patented. But if any geologist will order one from me specifying how he wants it made, at about what cost, graduated or not, with or without spirit levels and dial, and of what size inside or out, I will send him one at its cost to me, following his directions as far as they go, as I am about to have some made. The main expense is in the compass. Mine cost about $8 of which $6 was for the compass. The graduation I did myself. By the quantity they will be cheaper, yet the price will have a wide margin of variation. If one does not want to put out much money, for many districts the dial might be omitted, the graduation done at home, and an inexpensive compass used, though good enough work can be done to warrant a good compass.

State Survey, Houghton, Mich., August, 1889.

THE NEW FIRE-BOAT FOR NEW YORK CITY.

On April 5th there was launched from the yard of the Jonson Foundry and Machine Company, 118th Street and Harlem River, a new fire-boat called "The New Yorker," for the use of the fire department of the City of New York. It is said to be the largest and most powerful apparatus for extinguishing fire that has ever been built. It will supply four streams of water from 4-inch nozzles, besides a number of smaller streams from 2-inch, 1⅝-inch and 1-inch nozzles. The 4-inch streams can be thrown about 430 feet, with a force which will break in brick walls and iron shutters, and remove obstructions that could not be reached by the streams thrown by the ordinary fire engine. The nozzles are fixed in various positions on the boat, and are easily controlled in all directions by hand wheels. They are similar to the nozzles used in hydraulic mining in California.

Besides these fixed nozzles the boat is provided with large reels of hose, by which water can be taken inland for a distance of 2,000 feet, and assistance be given thereby to the land engines, either by throwing water directly on the fire, or by furnishing water to the suction pipes of the land engines in case the hydrant supply proves insafficient.

The long and narrow configuration of the city of New York, with its extensive water front on two rivers, renders the fire boat of especial value in subduing fires not only on the immediate water front, but for a long distance inland. It is intended to locate the boat at the Battery, at the junction of the two rivers, to connect it by cable with the fire alarm telegraph, and to keep fires lighted and steam up for instant use night and day.

The designer of the boat is Mr. William Cowles, of No. 45 Broadway, New York, who has designed similar but smaller boats for the cities of Brooklyn, Cleveland, and Chicago. The Jonson Foundry and Machine Company built the hull; the engines being constructed by Brown & Miller, of Jersey City; the boilers by McNeil & Laughlin, of Greenpoint, and the pumps, two sets by the Clapp & Jones Company, of Hudson, N. Y., and two by the La France Fire Engine Company, of Elmira, N. Y.

The following are the dimensions of the hull:

	Ft.	In.
Length over all	125	5
Length on load water line	115	0
Beam, moulded	26	0
Beam, over plating	26	1
Beam, over all	26	11
Beam, on load water line	25	2
Deep load, draught, extreme	10	0
Depth, moulded at frame 42	14	6
	Tons.	
Displacement to load water line	351	
Displacement per inch, at same	52	

The hull is of steel throughout, $\frac{7}{16}$ and ½ inch thick, made by Carnegie, Phipps & Co. The deck is also covered with steel, and the whole boat is practically fireproof. For the protection of the crew while fighting fire at close quarters there are movable iron shields which may be drenched with water to keep them cool. The boilers are of the Scotch type, two in number, each 12 feet diameter and 12 feet 9 inches in length between tube plates, or 15 feet over all. The shells are of steel $\frac{1}{16}$ inch thick. Each contains 204 tubes, 3½ inches diameter, and four corrugated furnaces, 38 inches diameter by 7 feet long. The total grate surface of the two boilers is 78 square feet. A steam superheater with which both boilers are connected is placed in the lower part of the stack. It consists of a cylinder 6 feet in diameter and 6 feet high, with seven 12-inch flues passing through it. The waste gases pass around the outside of this cylinder and also through the seven flues, while the steam is admitted to the inside of the cylinder. The stack is 7 feet 6 inches inside diameter, and is made of two thicknesses of iron, with an air space of 1½ inches between them.

The propelling engine is a direct vertical triple expansion engine, with cylinders 15, 24 and 39 inches diameter, and 24 inches stroke. The high-pressure cylinder has a piston valve, and the other two cylinders slide valves. The link motion is used with steam reversing gear. The engine is designed for a steam pressure of 200 pounds per square inch, and 180 revolutions per minute. The high-pressure cylinder has 15 square inches steam and 30 inches exhaust port area, the intermediate cylinder 40 square inches steam and 80 exhaust port area, and the low-pressure cylinder 100 inches steam and 200 inches exhaust port area. The piston rods are 3⅛ inches diameter, connecting rods 4 inches, tapering to 3½ inches; wrist pins, 5 inches diameter and 6 inches long; crank pins, 7⅛ inches diameter and 8 inches long. The shaft is 7¼ inches diameter, with bearings 9 inches long.

The shaft carries two screws, one the regular propelling screw in front of the rudder, 7 feet 9 inches diameter and 12 feet pitch, and the other one of the same diameter and 13 feet 6 inches pitch, aft of the rudder, swinging with it, being carried on an extension of the main shaft which passes through the rudder. The junction between the main shaft and the shaft of the "rudder screw," as it is called, is made by a universal joint, which allows the rudder and the screw attached to it to swing 50 degrees from a fore and aft line. This device is known as the Kunstadter patent screw steering and propelling device. It enables the vessel to turn quickly and in small space, which is of great importance in a crowded harbor.

The New Yorker is said to be the twenty-fourth boat to which the Kunstadter device has been applied, so it is no experiment. It was applied in 1880 to the Austro-Hungarian Lloyds steamer Najade, a vessel 218 feet in length, and of 1,600 tons displacement, and in 1882 to the Clyde built steamer Stratheden, 284 feet in length. This vessel has used the rudder screw successfully in voyages on the stormy Bay of Biscay. A good opportunity was given at the launching to inspect this steering gear, and its simplicity and apparent strength made a most favorable impression. The general adoption of the device for ferry boats would no doubt greatly diminish the danger of collisions, which are becoming more frequent as the number of boats on the river is being increased.

The new fire boat is expected to attain a speed of 16 miles per hour. We shall await with interest the trial, both of its speed and the efficiency of its steering apparatus and pumping-engines.

NEW HOISTING PLANT OF THE CALUMET AND HECLA MINING COMPANY.

The new hoisting plant recently built by the Calumet and Hecla Mining Company at Calumet, Mich., is one of the most elaborate ever erected. It consists of three triple expansion, vertical inverted beam engines, designed to hoist 10 tons at a speed of 2,000 feet per minute. The cylinders are 18 inches, 27⅜ inches and 48 inches in diameter, all by 7-foot 6-inch stroke. Each is provided with four gridiron valves worked by independent cams, so made as to equalize the cut-off. The high pressure cylinder only is provided with an adjustable cut-off, ranging from 0 to $\frac{8}{10}$ stroke. This is automatic, and is controlled by a hydraulic governor actuated by a high-speed ball governor. Between the high-pressure and intermediate cylinders and the intermediate and low-pressure cylinders are reheating receivers. The shaft is hollow, 29 feet long, 22½ inches in diameter, with a 7-inch hole throughout its length. Its bearings are 22 inches by 40 inches. The shafts, cranks, pins, piston rods, cross-heads and links are made of the finest quality of Krupp crucible steel. The outboard pedestal of the shaft is provided with a ball and socket shaft. The fly-wheel is 30 feet in diameter.

The hoisting system is the constant motion non-reversing friction system, the drum rotating with the engine shaft when hoisting and on the shaft when lowering. The hoisting drum is conical, 27 feet in diameter at one end and 14 feet 7 inches at the other, and turned with a spiral groove to accommodate 5,500 feet of 1⅛-inch wire rope. The engine, by means of an automatic device, varies its speed from 30 to 45 revolutions per minute, thus hoisting at a uniform rate. The power is thus varied as more or less rope is to be hoisted. The engine house, which contains also the pumps and accumulators, is 112 feet long by 68 feet wide, and is commanded by a 30-ton traveling crane.

The boiler house is 76 feet by 68 feet. It contains five boilers of the Belpaire type, 90 inches in diameter. They are the largest Belpaire boilers ever built, and weigh 86,000 pounds each. The fireboxes are each 4 feet 7 inches wide inside by 9 feet long, but the last 18 inches are covered by firebrick. A brick arch extends from this wall toward the fire door. There are 201 tubes 3 inches in diameter and 16 feet long in each boiler. The flues from the firebox to the combustion chamber are 3 feet 3 inches long, and the combustion chamber is 4 feet 3 inches long. The total length of the boilers is 34 feet 5 inches, width over all 10 feet 5 inches and height 9 feet 6 inches. The total heating surface of each boiler is 2,985 feet and grate surface 68¾ feet. Ratio, 42·1 to 1. The circular shell is ¾ inch thick, the outer firebox $\frac{5}{16}$ inch and the inner firebox ⅜ inch thick. Tube sheet ½ inch thick. All sheets are of Otis steel, of 37,000 pounds elastic limit, and 20 per cent. elongation in 15 inches. The working pressure is intended to be 185 pounds per square inch.

These boilers have shown themselves capable of giving out 1 horse power for each 4 square feet of heating surface when driving a compound engine. The Calumet & Hecla Mining Company has in service and ordered 46 of these boilers, 19 of which carry 185 pounds steam pressure and the remainder 135 pounds.

COLOR OXIDIZATION OF THE SURFACES OF METALS.

A number of experiments in coloring the surface of metals by oxidization, by annealing or heating, which were recently conducted in the Physico-Technical Institution, Berlin, serve to throw new light on this process, which is so important both from a technical point of view and from that of the art industries. In addition to steel, copper, nickel, brass and other alloys were employed in the experiments. The translucent layer of oxide, which is formed through the action of heat on the surface of metals on which the air plays, as it becomes stronger produces the well-known tints of thin films in a certain succession, showing a regular recurrence of the color scale according to the length of the waves. The successions of colors are not the same in the different materials. Steel and cast iron run from a yellowish tone to red, violet, blue and finally to sea green. Copper displays orange, a very pretty rose red, violet, steel white, brass yellow, flesh red, green, etc. Brass assumes a beautiful gold color, and subsequently green and red. Other alloys turn out like brass or copper, according as they contain more or less zinc. German silver, arsenical nickel and argentan display a remarkable marbling. Nickel shows the same running colors as steel. The colors depend on the temperature and its duration, inasmuch as the same colors may be obtained by a greater heat in a shorter time and by a lesser heat in a longer time. Thus, for example, a piece of steel became dark blue in nine days at 180 degrees, in 50 hours at 250 degrees, in 10 minutes at 290 degrees, and in 20 seconds at 380 degrees. It is better to allow a lower temperature to act during a longer time, as the oxide thereby becomes firmer. It appears, however, that there is for every temperature a certain point in the scale of colors beyond which it does not act. As regards the application of the process, several points require attention according to the material upon which it is desired to operate. Thus, brass must be carefully rubbed with acid before being put into the hot air bath for annealing, as otherwise an oxide layer at once forms that prevents a uniform coloring. Above all, care must be taken that there is

plenty of air in the room in which the annealing takes place, in order that sufficient oxygen is present for the formation of the desired color. It is better to hang up the article in a sufficiently large drum which should be turned over a fire, when it is not preferred to put it out in the open air. As was shown by a number of experiments with English and German tool steel and with wolfram steel, the facility with which the scale of colors is run through is largely affected by the chemical composition of the metal. The degree of hardness is also an important factor, and as hardened metal receives the shades later than softer metal the hardened parts in an annealed article become visible. The process thus affords a very valuable means of testing the homogeneousness of a material. Properly worked out it may be possible to insulate electric light wires with a coating of oxide. It may also be possible to employ the oxide coating as an ornamental protection in many cases where at present gilding and platinum are used. It is remarkable that a material so effective as a protector in the whole range of art industry has hitherto received so little attention. The process is, it is true, employed in the bronze and steel pen industry, but by no means as largely and as successfully as is probably possible. To produce similar color effects, a sulphide of lead precipitate is used, but it does not last as long, is not as effective and is confined to fewer shades than the annealing process.—*Kuhlows.*

Gold Thread.—The silver is brought from the Bank of England in cakes weighing about 1,000 ounces. To secure the necessary degree of tenacity a certain proportion of copper is added, and the alloyed metal, in the form of cylindrical bars, is next thoroughly heated. The hammering process follows, and the bars, originally about two feet in length and two inches in diameter, but now half as long again and proportionately thinner, are next filed and rubbed until their surfaces are perfectly even. What we may call the second part of the process begins with the laying on of leaf after leaf of gold in the proportion of two per cent. Afterward each bar is wrapped in paper and well heated in a charcoal fire. A sort of vice stands ready, and in it, bar after bar as it comes from the fire, is fixed and thoroughly burnished. All trace of its silver original has now disappeared, and the bar is ready for conversion into wire. This is accomplished by drawing it from 100 to 150 times through ever-diminishing holes in steel plates; and finally, when the capabilities of this metal have been exhausted, through apertures in diamonds, rubies, or sapphires. The delicate wire thus obtained must now be passed through the steel rollers of one of Herr Krupp's little "flatting mills." This brings us to the final process—the spinning of the flattened wire round silk, to form the golden thread of commerce. These spinning machines are worked by water, although two steam engines are to be found in the factory; for water power is considered to be more regular and even in its action. There is a small home demand for the round wire for the adornment of epaulets, etc.; but the bulk of the manufactured article finds its way in the shape of silky gold thread to India and the far East generally, where it is converted by skilled native labor into those gorgeous cloths and tissues in which the heart of the Oriental delights. It is asserted that every ounce of the bars, each containing only 2 per cent. of gold, will run to the length of from 500 yards to 2,500 yards, and the amazing figure of 5,000 yards is on record. This latter thread would be finer than human hair, but the extreme limit is not even yet reached.—*Chamber's Journal.*

Climbing a Tall Chimney.—John Phillips, the courageous roofer who made a contract with G. A. Clark & Brother to ascend the lofty chimney at Kearney, New Jersey, which was struck by lightning last week, and rig a tackle for workmen to repair the damage at the top, placed the last ladder in position on the iron cap on the 10th instant. Phillips's manner of working has been to lash the ladders to bolts driven into the chimney. Above the last ladder in position would be driven a stout spike with block and tackle, by which the next ladder would be hoisted. Phillips wore a safety belt, by means of which he would hook himself to the ladder on which he was working. He would lash the last ladder sent up to the preceding one, and as he worked his way up would secure it to bolts driven into the chimney.

At the top of the chimney the difficulty and danger of the work were greatly increased on account of the flare, which extended outward 5 feet from the collar. Here Phillips used hollow bolts containing a rod with screw and nut by means of which the bolt was expanded at the end after being driven, thus taking a fast hold upon the chimney. To rings in the end of these rods the ladder was firmly lashed. The last ladder placed on the cap was an iron one.

Phillips has been compelled to go up and down the ladders several times a day. Toward the last he would hook one end of the pulley rope, used in hoisting the ladders, to his belt and a man on the ground would aid his ascent by pulling hard enough to make the climber's ascent easy. Yesterday Phillips was compelled to hasten down at about noon when a thunder shower with a fierce squall of wind broke over the chimney.

The roofer will rig a block and fall with a boatswain's chair for Master Mason James Cunningham to make an examination of the chimney inside and out, and repair the large cracks made by the lightning.

Purification of Mercury.—J. M. Crafts, Bull. Soc. Chim., 49,856. The apparatus consists of a glass tube about 1.5 meters long and 5 centimeters in diameter, placed in a slightly inclined trough. The lower end is closed by a cork through which passes a funnel tube for pouring in the mercury, and a tube with a stop-cock for withdrawing it. The upper end is connected with an aspirator. The process consists in drawing bubbles of air through the mercury for about forty-eight hours, by which means all of the base metals amalgamated with the mercury are oxidized and carried, together with any other impurities which may be present, to the upper end of the tube, forming a layer of dross. The purified mercury can then be drawn out by opening the stop-cock at the other end. Ordinarily only 24 hours are required to remove completely all impurities contained in the mercury, excepting, of course, gold and silver, which can only be removed by distillation. A tube of the size mentioned holds about 20 kilos of mercury, and, unless the metal is very impure, the tube can be used several times without cleaning. The author shows that mercury is scarcely, if at all, oxidized by a current of pure air. The method, therefore, commends itself as being convenient and satisfactory. The author also finds that mercuric oxide is totally insoluble in mercury.

BOOKS RECEIVED.

[In sending books for notice, will publishers, for their own sake and for that of book buyers, give the retail price? These notices do not supersede review in another page of the Journal.]

Annual Report of the Chief of Ordnance for the Fiscal Year Ended June, 30, 1889. By Brig. Gen. S. V. Benét, Chief of Ordnance U. S. Army. Published by the Government, Washington, D. C., 1889. Pages 397. Illustrated.

Electrical Engineering for Electric Light Artisans and Students. By W. Slingo and A. Brooker. Published by Longmans, Green & Co., London and New York, 1890. Cloth, 8vo., 631 pp.; 307 illustrations. Price, $3.50.

Mining Code of the Republic of Honduras, with a Complete Appendix of New and Reformatory Decrees. Compiled and published by authority of the Supreme Government by Dr. R. Fritzgartner, Government Geologist and Director of Mining Statistics of the Republic of Honduras-Tegucigalpa, Honduras, 1890. Pages, 79.

Practical Mining.—A Field Manual for Mining Engineers, with Hints to Investors in Mining Properties. By J. G. Murphy, E. M. Published by D. Van Nostrand Company, New York, 1890. Pages 106. Price, $1.50.

The Mining Manual, 1889-1890, third edition. By Walter R. Skinner, London, England. Published by the author. Pages, 729.

PATENTS GRANTED BY THE UNITED STATES PATENT OFFICE.

The following is a list of the patents relating to mining, metallurgy, and kindred subjects, issued by the United States Patent Office.

TUESDAY, APRIL 8TH, 1890.

424,951. Pipe Coupling. James C. Bayles, East Orange, N. J.
424,977. Bevel Protractor. Reinhold Hakewessell and Fred K. Rand, Hartford, Conn.
424,978. Metallic Packing. William T. Harris, Indianapolis, Ind., Assignor to the Harris Supply Company, same place.
424,989. Dumping Bucket. William E Ludlow and Edgar S. Ludlow, Toledo, O.
425,001. Car Coupling. Charles G. Ruby, Beacon, Ia.
425,009. Apparatus for Vaporizing and Burning Hydrocarbon Oils. John L. Styron, Newark, O.
425,013. Sectional Steam Boiler. George E. Tregurtha, Malden, Mass.
425,024. Steam Vacuum Pump. Owen R. Davis, York, Pa., Assignor to John C. Swan, Greeley, Colo.
425,025. Apparatus for leaching ores. Donald Dennes and Tom K. Rose, Denver Colo.
425,037. Sprocket and Chain Elevator. David Marchant and George W. Patnoe, Chicago, Ill., Assignors to themselves and Dolese & Shepard, same place.
425,038. System of Telpherage. James E. Maynadier, Taunton, Mass.
425,050. Dust Proof Joint. Edward F. Roberts, Rochester, N. Y.
425,059. Fluid Pressure Automatic Brake Mechanism. George Westinghouse, Jr., Pittsburg, Pa.
425,072. Boiler Furnace. James S. Harkins, Minneapolis, Minn., Assignor of one-half to Jacob Merritt, same place.
425,073. Apparatus for Reducing Railway Rails. William H. Howells, Bridgeport, Ohio.
425,075. Automatic Brake for Vessels. Geo. S. Hunter, Black Hawk, and Jacob Sheerer, Beaver Falls, Pa.
425,076. Electrically Propelled Vessels. Rudolph M. Hunter, Philadelphia, Pa., Assignor, by mesne assignments, to the Thomson-Houston Company, Boston, Mass.
425,081. Process of making Zinc Sulphide. Alexander Keiller, Gothenburg, Sweden, Assignor to Theodor Lange, Brieg, Prussia, Germany.
425,101. Support for Electric Railway Conductors. Conrad J. Kilian, Milwaukee, Wis., Assignor of one-half to Dustin Atwood, same place.
425,106. Electric Rotary Pump. Emory I. Nichols, San Francisco, Cal., Assignor, by mesne assignments, to Irvine Stewart and Frank E. Temper, same place.
425,116. Gas-Engine. Joseph R. Valentine and Alexander T. Grigg, Pueblo, Colo.
425,164. Method of Electric Welding. Charles L. Coffin, Detroit, Mich.
425,166. Car-Coupling. Charles F. Francisco, San Diego, Cal., Assignor of one-eighth to George Goodwin, same place.
425,169. Valve for Steam-Engines. William Gehring, San Diego, Cal.
425,170. Furnace. Philip Geyer, Newark, N. J.
425,172. Cylinder and Piston Motor Engine. Johann C. Gräbner and Henri Ruperti, Kupferhammer, near Brackwede, Prussia, Germany.
425,176. Cut-Off Valve. Christopher R. James, Jersey City, N. J.
425,181. Car-Coupling. Henry P. Maiden, Ord, Neb., Assignor of one-third to Robert C. Nichols, same place.
425,202. Hydraulic Elevator. Silas W. Blanchard, Sheridanville, Pa., Assignor to Otis Brothers & Co., New York, N. Y.
425,206. Brake-Block. Hiram Butts and John J. Edmunds, San Diego, Cal.
425,207. Joint-Fastener for Railroad Rails. Edward J. Byrne, Fort Bowie, Ariz.
425,216. Pump-Operating Apparatus. Frank Goodfellow, Plattsburg, Ohio, Assignor of one-half to John H. Liephart, same place.
425,220. Crossing for Elevated Cable Railways. Elias R. Guerra, Hacienda de San Matias, Jalisco, Mexico.
425,226. Automatic Catch for Inclined Railways. Rudolph L. P. Henne, Cincinnati, O.
425,236. Boiler Furnace. Enos L. Moore, Portsmouth, O.
425,257. Dredger Derrick. Clinton H. Sage, Kenton, O.
425,260. Gas Furnace. Martin V. Smith, Pittsburg, Pa., Assignor to the Pittsburg Metallurgy Company, same place.
425,261. Hoisting Machinery. Rudolph C. Smith, Yonkers, N. Y., Assignor to the Otis Bros. & Co., of New York.
425,262. Traction Engine. Rudolph C. Smith, Yonkers, N. Y., Assignor to the Otis Bros. & Co., of New York.
425,264. Valve for Engines. Walter M. Smith, Jesmond, Newcastle-upon-Tyne, County of Northumberland, England.
425,266. Railroad Tie. Samuel D. Stauffer, Marietta, Pa.
425,275. Car-Coupling. James M. Vaughn, Water Valley, Ky.
425,276. Safety Check-Valve for Hydraulic Machinery. Henry Warden, Philadelphia, Pa.
425,282. Cable Tramway Pulley. William E. Winby and William M. Winby, Birmingham County of Warwick, England.
425,292. Apparatus for Manufacturing Oxides of Metals. Stephen R. Bradley and Arthur C. Bradley, Brooklyn, N. Y.
425,293. Shifting Eccentric. Jesse M. Branch, Gaylord, Mich.; Emma L. Branch, administratrix of the said Jesse M. Branch, deceased.
425,304. Railway Brake-Shoe. James A. Criswell, Philadelphia, Pa., Assignor of one-half to Frederick A. Genth, Jr., same place.
425,309. Steam-Boiler Furnace. James M. Evans, Spring Valley, N. Y.
425,324. Hollow Shafting. William G. Howell, Philadelphia, Pa.
425,327. Railroad Pump Motor. John Johnson, Martling, Ala.
425,333. Automatic Water Valve. Madison Maginn, Chicago, Ill.
425,351. Artificial Fuel. George Y. Smith, Minneapolis, Minn.
425,361. Steam-Engine. Richard Addy, Wallingford, Conn., assignor of two-thirds to William J. Arthur, John H. Arthur and Lester Conklin, same place.
425,388. Electric Railway Apparatus. John B. Odell, Chicago, Ill., assignor of one-half to Horatio N. May, same place.
425,389. Force Pump. Jay W. Powers, Winnetka, assignor to the Hydro-Pneumatic Manufacturing Company, Chicago, Ill.
425,393. Furnace. John Weber, Chicago, Ill.

PERSONALS.

Mr. H. W. Merchant, junior member of the firm of Merchant & Co., Philadelphia, Pa., has gone abroad in the interest of the firm.

Mr. D. B. Lyman has been appointed Superintendent of the Utah Consolidated Mining Company to fill the vacancy caused by the resignation of James G. Rule.

C. W. Jenks, who has had charge of the mining machinery department of the Sprague Electric Railway and Motor Company, died on the 9th inst., in this city, after two days' illness.

Mr. H. Knippenberg, who has held the position of general manager of the Hecla Consolidated Mining Company, at Hecla, Mont., for the last nine years, has agreed to remain three years more.

Columbia College, New York, has decided to give a prize to the student passing the best entrance examination to the School of Arts. The prize will be an annual one, and will be free tuition for four years, amounting to $600.

Messrs. Thomas A. and R. G. Gillespie have resigned their offices as superintendent and assistant superintendent of the Philadelphia Natural Gas Company, at Pittsburg, Pa., to engage in business for themselves as pipe line contractors.

Mr. William Kent has opened an office as consulting mechanical engineer at Room No. 125, *Times* Building. He will also act as New York representative of the Pittsburg Testing Laboratory, of which he was one of the original proprietors.

Mr. J. Parke Channing has resigned the position as mine inspector of the Gogebic Range, which he has held for the past three years, and Mr. Clarence M. Boss of Bessemer, Mich., has been appointed his successor. Mr. Channing has assumed the position of Agent of the East New York Iron Company at Ishpeming, Mich.

Mr. E. P. Jones, who has, during the past year, been the manager of the Utah & Montana Machinery Company's business in Butte, Mont., has resigned his position with the company to accept a like place with the Union Iron Works, of San Francisco. Mr. Jones will represent these works in Montana and the northwest, with headquarters in Butte.

OBITUARY.

William Galloway, who ran the first locomotive on the Baltimore & Ohio Railroad, died at Baltimore, Md., on the 6th inst., aged 81 years. Mr. Galloway, it is thought, was probably the oldest railroad engineer in the world. He was retired from the Baltimore & Ohio in 1887.

Dayton S. Morgan, of Brockport, N. Y., died at his home in that village on the 9th inst., aged 71 years. In 1846, McCormick, the inventor of the machine reaper, formed a partnership with Mr. Morgan for the manufacture of the first agricultural reapers ever put on the market.

B. Andrew Knight, President of the Huntingdon and Broad Top Mountain Coal Company, Pa., died suddenly at his residence in Philadelphia, Pa., on the 4th inst., aged 66 years. Mr. Knight was for a number of years President of the Susquehanna and Tidewater Canal Company, and managed its affairs with ability and success until it was absorbed by the Reading Railroad Company by lease.

Charles Kirchhoff, Sr., for upward of seventeen years an editorial writer for *The Iron Age*, and for other commercial and technical journals in this country and abroad, died suddenly on Sunday, April 6th, of heart failure, at the age of sixty-five years. Born in Stollhamm, Germany, he became connected with commercial enterprises in the West Indies before his majority, but established himself in business in San Francisco, Cal., in the pioneer days, holding at the same time the office of German Consul there. Returning to the East, he was for 20 years connected as partner with leading houses in the Colonial trade. Mr. Kirchhoff had an intimate knowledge of commercial affairs, and had traveled extensively, an experience of great service to him in his branch of journalism, which he entered in 1873.

Parker Handy, who died on April 8th at his residence at Short Hills, N. J., from the results of an apoplectic stroke, was one of the best known dealers in bullion and specie in this city. He was born April 24, 1809, at Paris Hill, Oneida County, N. Y. After receiving a common school education he went to Ohio. He went into one of the banks at Massillon, in that State, where he served as cashier through the crisis of State banks and unstable banking business. His was one of the few banks which weathered the storm. During the forties he came to this city, becoming cashier of the Ocean Bank at Greenwich and Fulton streets. He retired from it before its failure.

Subsequently he went into the South American trade, and carried on a prosperous business as senior member of the firm of Handy & Hoadley. In 1864 he again went into a bank, becoming Vice-President of the Third National. He was for many years its Acting President, and was one of its Directors up to about eighteen months ago. In 1870 he succeeded Peter Hayden, and established himself in the banking business, dealing specially in bullion and specie, at 24 Nassau Street, where he carried on business up to the time of his death. In 1879 the house carried on business under the firm name of Handy & Cronise, continuing as such to 1885, when Mr. Cronise retired, and Mr. J. F. Harman went in his place, the firm becoming Handy & Harman.

INDUSTRIAL NOTES.

The Oliver Iron Works, in Pittsburg, Pa., which were closed last week on account of a strike, resumed operations on the the 7th inst., the men having yielded.

The run during March at the Edgar Thomas rail mills of Carnegie Bros. & Co., at Braddock, Pa., was a remarkable record. For 26 days' work the output is stated to be in excess of 30,000 tons.

A disastrous fire occurred on the 10th inst. in the machine shops of the Lewis & Fowler Company, manufacturers of street-cars and street-car supplies and fixtures, in Brooklyn, New York. The building containing the machinery, foundry, etc., was destroyed, involving a loss, it is said, of about $150,000.

A correspondent informs us that brick contractors and builders are badly wanted at Yazoo City, Miss. Three cotton warehouses are to be erected this summer, and school houses and other buildings would be erected if men and material could be secured in time. The town is very much in need of mechanics.

The rolling mill and office of the Johnson Forge Company, at Wilmington, Del., was destroyed by fire on the 5th inst., with much valuable machinery. The forge mill, with five puddling furnaces, was saved. The company manufactured car axles. The loss is estimated at about $10,000 and $15,000; insurance, $10,000.

The Walker Manufacturing Company, Cleveland, O., is finishing one of the largest cut spur gear wheels ever made. It is 30 feet 6¾ inches in diameter on pitch line, 30-inch face, 27-inch bore; has 192 teeth, 6-inch pitch and weighs 66 tons. The company has issued an invitation to its friends to call and see the wheel at the works.

The Allegheny Bessemer Company, Allegheny, Pa., is reported to have closed an order for 10,000 tons standard rails to be delivered in September to the Atchison, Topeka & Santa Fe road at Deming, N. M. It is believed that a portion of these rails is to be used in the extension of the Silver City branch, whose junction with the main line is at Deming.

The Steel Tubular Car Company, just organized, is interested in an invention that is expected to revolutionize the present construction of passenger cars. The company has bought from 3,000 to 5,000 acres of land near Bradford, Pa., where the car works are to be established. The invention provides for a framework of steel tubing so arranged as to withstand the severest shocks or collisions or derailment.

The fire in the United States Rolling Stock Car Works, at Decatur, Ala., on the 9th inst., was discovered in the forging department of the car works. The machine shop, blacksmith shop, bolting room and engine room, with all their contents, including a 300 horse power engine, were destroyed. The fire was accidental. These are the car works which were removed from Urbana, O., two years ago, and were the largest in the South. The main building, where the woodwork is done, is unin jured.

The Piqua Rolling Mill Company, Piqua, Ohio, whose product is entirely controlled by the Cincinnati Corrugating Company, of Cincinnati, Ohio, state that it has broken the record in the length of time in constructing its mill plant. It first broke ground in the early summer of 1889, and inside of five months completed the entire plant, which has been running ever since, with the exception of one or two short intervals, the machinery working smoothly from the very start. Two Hamilton-Corliss 500 H. P. engines furnish the motive power. These engines are connected directly with the mills, three in number, having a capacity for turning out 20 tons of finished product per day. The two muck shears are run by an independent engine.

On May 1st the New York office of the Standard Underground Cable Company will be removed to the *Times* Building. This change has been made desirable by the necessity for more extensive office room for the accommodation of the increased business of the Standard Company. The building of the new factories of this company at Brinton, Pa., near Pittsburg, has just been begun. These will cover some eight acres of ground, and when completed will probably be the most extensive and complete wire and cable companies in the world. The factories will be directly connected by means of special tracks for their own use with two railroad companies, and switches will be provided there through various parts of the factory grounds to facilitate the loading and unloading of carload lots. The present factories are worked to their fullest capacity day and night filling the large orders received, not only for the United States, but for foreign countries, including especially China and Japan.

The following changes have taken place in the management of the Illinois Steel Company: O. W. Potter and E. C. Potter retired on the 1st inst. O. W. Potter resigned the chairmanship of the executive committee, but will retain his membership in the board of directors and will continue to occupy an office in the company's suite in the Rookery building. His successor as chairman of the executive committee is A. J. Forbes-Leith. E. C. Potter resigned his position as second vice-president and also his membership on the board of directors. H. S. Smith, superintendent of the Joliet works, succeeds him as a director and member of the executive committee. Mr. Smith was one of the directors of the Joliet Steel Company at the time of the consolidation of the three companies. The second vice-presidency has been left vacant. The improvements now in progress at the works of this company are being vigorously pushed. At South Chicago the new blast furnaces are well under way and the rail mill is being reconstructed as rapidly as possible. The changes in the rail mill are so extensive that two months or more will elapse before it is put in operation. Ground has not yet been broken for the plate mill, and will not until the other work of construction on hand is at least partly out of the way. The plate plant will, however, be built at South Chicago, and is to be a wholly new enterprise. At the North Chicago works only the blast furnaces are at present in operation. A fitting shop of the most improved character is being added to these works to finish beams and other building material, so that when the mill resumes operations it will be prepared to meet all the requirements of the building trade. At the Joliet works the new blast furnace is about completed and the construction of the new rod mill has been commenced.

CONTRACTING NOTES.

The directors of the Gulf & Chicago Railway Company, at a meeting in Mobile, Ala., on the 10th inst., awarded to a Chicago construction company the contract for the construction and equipment of the main line from Mobile to the Tennessee river. The specifications call for roadbed and equipment of standard quality; the whole line, with station-houses, shops, round-houses, telegraph lines, etc., to be completed in three years. English capitalists are said to be backing the undertaking. C. C. Merrick, of Chicago, is the President.

MACHINERY AND SUPPLIES WANTED AT HOME AND ABROAD.

If any one wanting Machinery or Supplies of any kind will notify the "Engineering and Mining Journal" of what he needs, his "Want will be published in this column.

Any manufacturer or dealer wishing to communicate with the parties whose wants are given in this column can obtain their addresses from this office.

No charge will be made for these services.

We also offer our services to foreign correspondents who desire to purchase American goods, and shall be pleased to furnish them information concerning American goods of any kind, and forward them catalogues and discounts of manufacturers in each line, thus enabling the purchaser to select the most suitable articles before ordering.

These services are rendered gratuitously in the interest of the subscribers and advertisers; the proprietors of the "Engineering and Mining Journal" are not brokers or exporters, nor have they any pecuniary interest in buying or selling goods of any kind.

GOODS WANTED AT HOME.

741. Steel rails, locomotives, and flat Cars. Georgia.

742. Catalogues and prices of cedar tanks, logging carts, common farm wagons, cane mills, evaporators, cotton gins, and presses. South Carolina.

743. Pump or dredge suitable for excavating and distributing marsh mud and sand for filling purposes. Florida.

744. Contract with some foundry to make two or three tons of light gray iron castings. North Carolina.

745. 500 pairs of plow handles. North Carolina.

746. Lot of flat machinery, steel and iron. North Carolina.

747. Coil brass spring wire. North Carolina.

748. Overhead traveling hoist. Vermont.

749. Electric light plants, ice factories, and water-works supplies for two cities in Texas.

750. Water pumps. ammonia pumps, boilers, cast-iron cylinders, lap-welded, extra heavy; 1¼ ammonia pipe, bent pipe work, asbestos cocks, valves, ammonia gauges, etc. Also vacuum pumps and freezing cans. Georgia.

751. Wood planer to dress crooked plow beams and for surfacing; second-hand, in good condition. Tennessee.

752. Several second-hand upright engines, 3 to 10 H. P.; also good second-hand upright boiler on wheels, 12 to 18 H. P. New Jersey.

753. Shafting, belting and pulleys. Iowa.

754. One 8-inch automatic engine and one 10-inch plain slide-valve engine. Kentucky.

755. Automatic engine, 10 H. P. Tennessee.

756. Wood-working machinery, band sawing machinery, machine for cutting stamp grooves in tobacco boxes, and machine for cutting lining sticks for tobacco boxes. Tennessee.

757. A heavy single saw mill. Alabama.

765. A tail-rope plant for a colliery; plant includes coupled high pressure horizontal engines 18″×30″; two drums 5′ diameter; two return tubular boilers, 80 H. P. each, 60″ diameter by 16′ long, and all other parts of the plant necessary to make an efficient working concern. Bids are to be made f. o. b. cars at colliery in Tennessee, and a competent man is to be sent to superintend erection.

766. Machinery for a chair and furniture factory. Alabama.

767. Cold storage machinery of the most approved pattern. Tennessee.

768. Heating apparatus for two buildings. South Carolina.

769. Water motor, 8 to 10 H. P. Maryland.

770. Hand elevator chain pump and power to bring water out of a well 70 feet deep, with a capacity of 500 gallons per day of ten hours. North Carolina.

771. Complete plant for calcining plaster. Virginia.

772. Windmills to pump water into tanks. Mississippi.

773. Bricks for the construction of several houses. Mississippi.

AMERICAN GOODS WANTED ABROAD.

702. Brick and tile machinery. Mexico.

738. A plant for a tin mine; all machinery necessary: engines, furnace, crusher, buddles and jigs. Mexico.

759. Gas machines for making gas for private residences. Australia.

774. Japanned or nickel music stands for a military band; prices per dozen. Malta.

GENERAL MINING NEWS.

Parties who held an interest in the Lima Oil Company, Ohio, which was purchased by the Standard Oil Company, as mentioned in our issue of March 29th, have purchased the property and franchises of the Kentucky and Tennessee Oil and Mining Company, which consists of petroleum, cannel coal, live oak and poplar timber, and about 240,000 acres of land in these States. The capitalization is $600,000, and the principal office is in Albany, N. Y., with branches in New York City and Rugby, Tenn. Dudley Farlin is president of the new company.

Nine hundred miners of the Gogebic and Penokee iron ranges met at Ironwood on the 4th inst. to organize a union. The delegates present represented 6,000 men. Organization committees were appointed of three men from each mine on the ranges, who are to canvass every property for members. Officers will be chosen at a meeting to be held at the same place, April 27. It is stated that the chief object of the union is to direct a blow at the system of physicians and medical attendance prevalent at all Lake Superior mines.

The Oregon Railway Extension Company has filed supplementary articles of incorporation at Olympia, Washington, empowering them to build 3,000 miles of railway in Oregon, Washington, Idaho and Montana. It is understood that the company is backed by the Union Pacific Railroad.

ARIZONA.

YAVAPAI COUNTY.

Fourteen suits for damages have been filed in the District Court at Phœnix, against the Walnut Grove Water Storage Company, by sufferers from the late flood. Attorney General Churchill and J. B. Woodward appeared for the plaintiffs. In the issue of the ENGINEERING AND MINING JOURNAL of March 1st, we described and illustrated this dam.

CALIFORNIA.

AMADOR COUNTY.

NORTH CALIFORNIA MINING COMPANY.—Negotiations are in progress to bond the North Carolina and Joe Davis claims, which belong to this company, to San Francisco capitalists for $40,000.

COLORADO.

Manager Linberg, of the American smelting companies of Leadville, has wired Washington to the effect that Colorado miners *do not want* Mexican ores taxed. The Ouray County *Muldoon* and Gilpin County *Observer* have contended from the start that taxing Mexican lead ores was in the interests of a combination of smelting men and against the miners, but so strong was the pull enjoyed by the opposition that even the miners in the dry ore camps of Georgetown and other points were drawn into resolutions that imposed an extra treatment tax upon them.

BOULDER COUNTY.

KEYSTONE.—The ore taken from the mine at Magnolia, owned by ex-Congressman Bagley, of New York, and Judge Owen, of Boulder, is concentrated by Frue vanners. The mine is said to be looking well.

CLEAR CREEEK COUNTY.

MAGNOLIA GOLD AND SILVER MINING COMPANY.—Reports presented at a recent meeting of this company show that fifty thousand shares of stock were sold for 75 cents to be used for developing capital. This property consists of nine claims in the Lincoln mining district.

YARMOUTH MINING COMPANY.—Captain Wilson S. Swain, manager of this company, is reported to have stated that a valuable strike of mineral has been made in the bottom of the Mary Foster shaft. The mineral was discovered at a depth of a 132 feet, and has opened out and improved in quality and quantity as depth has been gained. The ore is found to be in a vein about 18 inches wide and of a high grade. This property is situated at the head of Ute creek, in Cascade district.

LAKE COUNTY.

AGASSIZ MINING COMPANY.—A strike from which already nearly 300 tons of lead carbonate ore has been shipped is now being opened in the Monte Cristo claim of this company. In the old workings of the mine a streak of quartz was always met with underlying the ore, which was invariably considered as the foot wall of the vein, but latterly the lessees on that portion of the ground thought fit to sink a winze through this quartz, and after passing through some five feet of it, met with some carbonate ore. This was drifted on, and has been run through in one direction for about 30 feet, and crosscut upon for 25 feet, the ore body being found continuous for that distance each way. About twelve tons per day are being extracted. This ore was found in what is known as the Jones' raise, and is located about 200 feet south of the Wolfe Tone shaft on the 650-foot level. No water is troubling the lessees at present, and as the sale of this property is to be made on the 15th inst., and the lease is contingent on the sale, the lessees are doing their best to get out as much ore as they possibly can.

HENRIETTA-MAID CONSOLIDATED MINING COMPANY.—The lime channel in this mine and the Maid continues to open out as the development proceeds, and proves to be larger than was at first thought. The two drifts run from the north drift of the Maid shaft, called respectively Adams No. 1 and No. 2, are now in over the Adams line some 50 feet each. Streak after streak of the mineral is met with, separated by streaks of iron sulphide and lime, and as one streak is cut through, the next appears to be larger. That upon which work is going forward in Adams No. 1 will average over four feet in width, and is said to carry on an average 15 per cent. of copper, 150 ounces of silver and 6·10 of an ounce of gold to the ton, and Adams No. 2, about 40 ounces in silver, 5 per cent. copper and one-half ounce of gold to the ton, from a streak about 8 feet in width. The north drift is to be carried forward, as in opening up these workings a copper streak was encountered. These streaks are found as a rule to run parallel with the lean streaks of sulphide iron ore that does not pay to ship. The lower workings show ore everywhere, and the developments in the upper workings are encouraging, as in the Adams so-called second contact a large body of lead carbonate ore has been encountered, which is reported to average 40 per cent. lead and about 4 ounces of silver to the ton, and from which some ten tons per day are being regularly shipped. These workings are quite dry, but a great deal of inconvenience is being caused by the flow of water in the lower workings. The connection between the old shaft and that on the Maid having been made, a deal of hoisting is now done through the former, all of the ore from the Star lease coming out that way. This now amounts to about 40 tons per day of lead carbonate, of which there are now blocked out, in the entire workings of this consolidation, some 60,000 tons.

PITKIN COUNTY.

The Aspen Public Tramway Company got its line to Tourtelotte Park in final operation on the 1st inst.

In the Durant-Bonnybel suit, referred to in these columns on February 2d and March 9th, 1889, Judge Hallet decided in favor of the Durant and set aside the second trial which resulted in a second verdict for the Bonnybel.

Statistics regarding the output of Aspen for 1889 have been compiled by Mr. F. G. Bulkley, and show that there were fifty producing mines in Pitkin County outside of the Independence group of gold properties. It was exceedingly difficult to secure accurate information concerning the output of many of the mines, and a large number had to be estimated, many of the individuals and companies operating here declining to give the figures of their output, and for this reason no absolutely accurate return can be made. Mr. Bulkley, in response to the requests made by him, received partial or full reports from 26 properties; in the case of seven other mines he was compelled to make separate estimates based on some figures that had been secured, while with all the remainder a general estimate had to suffice. The 26 mines reporting, partially or in full, shipped, during the year 1889, 88,216 tons of ore. This ore contained 4,853,916 ounces of silver and 6,263.74 tons of lead.

The railroad companies' books show that they shipped out of the camp during the year 121,444 tons of ore, and Mr. Bulkley estimates that the total contents of silver in this ore amounted to 6,654,916 ounces, and the contents of lead to 6,838.74 tons.

THE BUSHWHACKER MINING COMPANY.—An important mining transaction was consummated on the 5th inst. between A. W. Hawkins, of the Park-Regent mine and The Aspen Consolidated Mining Company and the Centinental Divide Mining Investment Company, the controlling owners of the Bushwhacker and Alpine mining claims on Smuggler Mountain. In November last Mr. Hawkins instituted an apex suit against B. Clark Wheeler, the companies and others, which resulted in a compromise. The interested parties have now consolidated their interests in the Bushwhacker and Alpine, and organized a joint stock company with $2,000,000 capital stock. The name chosen is the Bushwhacker Mining Company. The directors are: E. D. Wright, manager of the Park-Regent mine, L. S. Smith, Esq., Judge Davis H. Waite, William Balderston and B. Clark Wheeler. Mr. Wheeler will be president and manager, Mr. Wright, treasurer, and Mr. Balderston, secretary. Four hundred thousand shares of the stock and $112,000 of the products of the mines will be converted into the treasury as a fund to work the property and pay off the obligations on bonds and options. The treasury stock, it is said, will be sold at 25 cents a share, which, together with the $112,000 the parties agree can come from the mine, will place the company on a financial basis and enable it to pay all claims against the property and do extensive development. Over $5,000 worth of machinery is on the ground and the production is about $1,000 a day. There is some talk of listing the stock on the Kansas City or St. Louis Stock Exchange. The deeds in escrow are being taken up before they are due in order to save royalties.

SAN MIGUEL COUNTY.

SAN BERNARDO.—This group of mines was recently sold to an English company, it is said, for $100,000. The sale was made through Mason & Beattie, who had a lease and bond on the property.

SUMMIT COUNTY.

VICTORIA MINING AND MILLING COMPANY.—A 5-inch streak of mineral was opened up last week in the Victoria, belonging to this company. In widening out the drift to take out the milling gold quartz this streak was made. Mill runs from this ore give, according to reports, returns of 167 ounces in silver and 40 per cent. lead.

FLORIDA.

COLUMBIA COUNTY.

COLUMBIA PHOSPHATE COMPANY.—This company has been organized with a capital stock of $1,000,000 to develop phosphate lands in Lake City.

WITHLACOOCHEE PHOSPHATE COMPANY.—This company has purchased, it is stated, 320 acres of land at Devil's Elbow, on the Withlacoochee river, from J. T. Griggs and G. Bridges at $3,200.

GEORGIA.

POLK COUNTY.

The sale of the Cochran iron mines, near Rockmart, to a Boston party is reported. Development work will be pushed, and it is said a furnace may be built.

KANSAS.

CHEROKEE COTNTY.

(From our Special Correspondent.)

GALENA, April 5.

The Business Men's Club of Galena is now fully organized, and celebrated the opening of its club rooms in a very pleasant manner last night. In response to an invitation sent the Joplin Club to attend the opening, the following members of the latter went over on the evening train: President Henderson, Vice-President Picher, Secretary Gregg, Judge Picher, E. D. Porter, O. B. Steen, F. M. Shaw, John Wise, Captain Staples, C. Gumgerich, Patrick Murphy, A. C. Spring, W. B. McAntire, Lee Taylor, J. C. Fenlon, Ed. Zelliken, Phil Pfenning, Capt. Halibaugh, O. B. Hamlin, E. O. Bartlett, Gus Weymann, W. H. Kelley, Capt. T. H. Ijams, W. Waters Van Ness. By invitation the party was accompanied by Colonel Humphrey and Charles J. Oliver, of Denver, Colo., and E. A. Hasbrook and E. E. Ring, of the

Kansas City *Times*. At the depot in Galena the party was met by a committee of gentlemen and escorted to the assembly room of the Business Men's Club. Promptly at 8 o'clock A. W. McPherson, president of the club, called the assemblage to order and the visitors were formally welcomed in a most friendly manner by G. Schmuck. Judge Picher and Col. Gregg responded. Reference having been made to the forthcoming miners' convention, Col. Gregg explained how it came to be called, and expressed his opinion, which was fully endorsed by the entire assembly, as to the benefits to be derived from a permanent organization.

Col. W. B. Stone, the veteran mine operator of Galena, took up the subject of the importations of Mexican lead ores, and he strongly urged that action be taken at once to secure the placing of a duty of one and one half cents per pound on all such ores shipped into the United States. He said that the Ways and Means Committee of the House had provided for such a duty in their bill, but that the duty had been stricken out at the instance of the Kansas City Refining and Smelting Company and the Santa Fe Railroad. He thought that such action was a great injustice to this lead and zinc district, and that some means should be devised to secure the protection which the import tax would give.

In conclusion, he submitted resolutions to the effect that an import tax of one and one-half cents should be imposed, and that, if such tax be not imposed, all articles of commerce produced in Mexico and imported into the United States should be admitted free of duty. Judge Picher indorsed the lead tax. E. C. Weilep opposed the adoption of the resolution. He was not a high-protectionist, and did not believe that a tax on Mexican lead was essential to our prosperity.

He did object, however, to the admission of Mexican lead free of duty when everything else was taxed. If operators in other industries were made beneficiaries of tariff taxes he wanted to be a beneficiary also. He opposed the adoption of the resolutions, not because of any unwillingness to ask for benefits, but because he desired to have the resolutions carefully considered and properly drawn.

He moved that the resolutions be referred to a committee with instructions to submit a report at the next meeting of the club. The motion was seconded by W. F. Supp. After some little discussion it was decided to appoint a committee and instruct it to prepare resolutions on the subject and forward the same to the Ways and Means Committee in the name of the club. The chair appointed as members of this committee Col. W. B. Stone, W. F. Supp, E. C. Weilep, Jas. Murphy, and A. McPherson.

The president of the club appointed the following persons delegates from Galena to the miners' convention to be held in Joplin, April 10th: Col. W. B. Stone, A. W. McPherson, E. C. Weilep, J. Murdock, W. H. Miller, John Page, T. J. Vest, John Murphy, J. P. Walters, James Boice, J. Shoman, G. Schmuck, M. Robeson, E. St. George Noble and Thomas Murphy. At this point A. W. McPherson, president of the club, suspended the order of business, and requested the assembly to follow the secretary of the club, Mr. Noble, and nobly he lead us to a splendid banquet.

The rest of the evening was spent socially with a few impromptu speeches. Your correspondent was very much pleased at a statement made by Col. Stone in the course of his remarks, that the value of a mine was often increased 100 per cent. by having the property examined and reported on by a reliable expert; we fully agree with the Col. on this point, for in case the property is offered for sale it can only thus be presented in its true light. Patrick Murphy, the veteran mine operator wanted the mine operators and land-owners to pool together and do some deep prospecting, and develop the mining lands to greater depths than has been done heretofore. This closed the formal opening of the business men's club of Galena, Kans.

MICHIGAN.

METROPOLITAN IRON AND LAND COMPANY.—This company has declared a stock dividend of 25%, payable May 1, to stockholders of April 20th. This makes total capital stock 100,000 shares, par $25, or $2,500,000 the limit of capitalization allowed by State of Michigan. The company, it is said, will mine this year 1,000,000 tons of first-class Bessemer ore, 750,000 tons of which have already been sold. It operates the Norrie, North Norrie, East Norrie and Pabst mines located in Ironwood, Mich. It will pay a cash dividend of $3 per share April 20th. The stock is largely held by Eastern people and sold less than 9 months ago at $30 per share, last sale $85 ex-cash dividend.

COPPER MINES.

TAMARACK JUNIOR MINING COMPANY.—During the past month No. 1 shaft of this property was sunk 106 feet, and is now down something over 1,800 ft. During the same month No. 2 shaft was sunk 80 ft.

IRON MINES.

OLD PILGRIM.—Capt. Christopher, superintendent of the Palms mine, and Tom Waters, of the Bessemer, have taken an option on this property, near Wakefield, which was abandoned last fall by the Houghton owners. The north forty of the Pilgrim is supposed to be valuable, notwithstanding the fact that a cross-cut over 700 feet long has been run at a level 200 feet down, and over $40,000 expended in exploring the two south forties. The name will be changed. The new company may or may not pump out the old shaft, as appears most advisable when the details of future operations—which will begin shortly—are finally mapped out.

PENN IRON MINING COMPANY.—The option for a lease on the Harrison property at Norway which contains twelve forties of land in Sec. 8, 39 and 29, was transferred to the Penn Iron Mining Company, and that company will at once proceed to put in machinery to sink a shaft and open up the property.

RIVERSIDE.—The diamond drill at the Riverside property has struck a vein of magnetic ore at the depth of 40 feet from surface and cut into it 23 feet. This boring is being made at a distance of 800 feet west of the old workings.

RHINELANDER MINING COMPANY.—On this property, which joins the Mikado on the west, a diamond drill penetrated ore same sixty feet, according to the statements of Mr. Waters, one of the owners of the Rhinelander option. He claims that from 40 to 50 feet of it is clean and merchantable Bessemer ore. The company has ceased work with the drill, and will begin the sinking of a shaft soon near the old Rhinelander workings on the Lake Shore Railway track.

MISSOURI.

JASPER COUNTY.

(From our Special Correspondent.)

JOPLIN, April 7.

There was but little activity in the mining industry for the week ending April 5th. The weather was wet and cold to such an extent that the surface men only put in about one-half time; added to this, the ore buyers were rather inclined to bear the prices of ore, the ruling prices being $22 to $24. For some unexpected reason no reports of sales came in from Webb City, Carterville and Galena. The following is the output of the district as far as reported:

Joplin Mines 986,475 lbs. zinc ore, and 93,180 lead value $13,361.

Zincite Mines 187,955 lbs. zinc ore, value $2,254; Lehigh Mines 120,110 lbs. zinc ore, value $1,144. Total $16,759.

Cook, Millelberg & Co., on the Oswego land, turned in 12,040 lbs. zinc ore and 2,480 lead.

Bauer & Co. have reopened the old Hudson River pump shaft on the Oswego land and turned in 15,180 lbs. lead.

Smith & Harrington, operating on the Mahaska land, struck a good body of lead last week, and cleaned up over 2,000 pounds from the shaft.

A gentleman who is connected with a large smelting company left Saturday night for Kansas City, after having spent several days in looking over the lead and zinc mines. The object of his visit was made known to very few, but it has been ascertained from a reliable source that his company is contemplating the erection of a large smelting plant at Joplin, at a cost of $200,000. The enterprise is expected to develop fully within the next ten days. This is what this section requires at present, and we hope the preliminary arrangements will be speedily closed.

Colonel Dunham, who is largely interested in, and a general manager of, the American Nettie gold and silver mine at Quray, Colo., called at the Joplin office of the ENGINEERING AND MINING JOURNAL, and made, in company with your correspondent, a visit to the Ruby zinc mine, where we descended and made an inspection of the 872 feet of underground workings. The Colonel was well pleased with the appearance of the ore bodies exposed, and determined to stop with us a few days on his return from St. Louis.

Messrs. Humphrey & Oliver, the Denver mining brokers and operators, who have been investigating our lead and zinc mines, are so favorably impressed that they have selected a mine and will make an investment.

Judge E. H. Norton is here looking after his many mine interests, and will do some extensive development during the summer. The Judge is one of the pioneers of this lead and zinc district, and has seen the mines grow from prospect holes to their present condition.

Several stockholders of the Roaring Springs Land and Mining Company are here from Harrisburg, Pa., to witness the starting up of their new concentrating plant; this company has done a large amount of development during the past year and exposed large deposits of lead and zinc ore.

Mr. T. B. Keer, of Kansas City, was here during the past week, and had on exhibition a new device for hand power mining and drilling. It was examined by many practical miners and mine operators. It is an entirely new principle for furnishing the power to cut the rock. The power is transmitted to the drill by turning a wheel to which is attached a shaft and rapid cam movement.

The entire weight is about 50 pounds, and can easily be handled by one man. The drill can be set at any angle by adjusting the tripod on which it sets. Mr. Keer will return soon and make a practical test by drilling some holes in a mine.

MONTANA.

Mr. W. W. Hale, coal agent for the Montana Union Railroad, has been traveling in Montana for several weeks, investigating the coal fields of the State. According to statements attributed to him the Horr coal, which as a coking proposition, is superior to the celebrated Blossburg coal of Pennsylvania. The following comparative analyses are claimed to be official:

Blossburg coke—		
Fixed carbon	84·760	per cent.
Ash	13·345	"
Sulphur	·998	"
Horr coke—		
Fixed carbon	83·500	per cent.
Ash	11·	"
Sulphur	·005	"

Mr. Hale has visited among others the Cinnibar, Sand Coulee, Cokedale and Timline mines.

BEAVERHEAD COUNTY.

GOLDEN LEAF COMPANY, LIMITED.—It is reported that instructions are hourly expected for the commencement of work at the mines lately purchased by the English company from Phil Shenon, at Bannack. Mr. Link Merrill, late of the Hope mine, at Philipsburg, has been engaged to take charge of the property.

CASCADE COUNTY.

CASTNER COAL AND COKE COMPANY.—This company's property is located on Belt creek, Cascade county, about twenty-three miles north of Great Falls, and is developed by a tunnel 900 feet in length. Mr. T. H. Kleinschmidt, who has recently visited the property, says that the vein is 6 to 10 feet in width, and contains a quality of coal equal to the best in the State. It lies almost flat under a cap of red and white sandstone three to four hundred feet in thickness, which is pronounced to be the finest quality of stone for building material. The ground located is a mile in length, directly alongside of the Great Northern railway, and if the demand would justify it a thousand men could be immediately put at work. It can be mined very cheaply and the cost of transporting the product of this property to the cars will be low.

DEER LODGE COUNTY.

The erection of a custom smelter at Philipsburg is under consideration. A company will be formed for the purpose of raising funds for putting in the plant. It is stated that there are a good many claims lying idle in this vicinity because the owners cannot afford to extract the ores and ship them on the railroads to the smelting plants of Butte, Helena and Omaha; and in other cases the ores are not rich enough to pay the high rates of transportation in addition to the working charges.

AMERICA-RUBY MINING COMPANY.—The extent of the strike on the 200-foot level of this company's mine, in the Oro Fino district, has been made public. The crosscut developed a lead twelve feet wide. Of this three feet is said to be 87 ounce ore. A drift is being run on the level. President J. S. Halteman and Secretary C. Frye, of St. Paul, arrived in Deer Lodge recently and visited the mine. It is expected that shipments will begin soon.

BI-METALLIC MINING COMPANY.—Excavations have been going on at the hoist and lumber is being conveyed to the site for the building of an addition to the present shaft-house, which, when completed, says the Philipsburg *Mail*, will make the largest shaft-house in Montana. W. Thomas Hart, acting superintendent at the Bi-Metallic in the absence of J. R. Risque, is experimenting on a new process for roasting the Bi-Metallic ores. Should this new undertaking prove a success, the company intend treating their base ores by the roasting process instead of building a smelter.

MOUNTAIN LION MINING COMPANY.—The stockholders of this company will meet in Deer Lodge April 19th to consider the advisability of cancelling 100,000 shares of the unsold treasury stock, thereby reducing the issue from 500,000 to 400,000 shares. The final details of changing the stock from a non-assessable to an assessable basis will also be consummated at this meeting. When this is done an assessment will be immediately levied and the work of development resumed.

JEFFERSON COUNTY.

PARK.—Work of development is being rapidly forwarded in the Park mine. The ore chute has been followed in the Jackson tunnel 125 feet. At the end of the 125 feet a "horse" was encountered, which continued for about 20 feet, but the tunnel is again in solid ore of low grade. Arrangements are now being made for sinking a winze 300 feet from the lower tunnel on the body of good ore. If a pending deal in New York goes through $50,000 will be added to the company's treasury, and immediate steps will be taken to erect a concentrator.

SILVER BOW COUNTY.

ANACONDA COPPER COMPANY.—Local papers report that water is still being injected into the St. Lawrence shaft from two pump lines, and will be until the 15th of April, when it is expected Marcus Daly will return from the East, and the mines will not be opened till he arrives. Fourteen sinking pumps have been placed on the ground and more are to follow, preparatory to the pumping out of the shafts. Each pump is capable of

throwing between sixty and seventy gallons of water every minute. It is reported that the water is up between the three hundred and four hundred levels of the St. Lawrence, in the vicinity of the free milling ore, and much difficulty is experienced in getting it above that point. It is about conceded that the fire has been extinguished, as no smoke or gas is escaping from the small aperture cut in the surface bulkhead of the St. Lawrence for the purpose of measuring the height of water in the shaft. But nothing definite can be known till the seals are broken and explorations made.

BOSTON & MONTANA CONSOLIDATED COPPER AND SILVER MINING COMPANY.—This company is grading a foundation at the Mountain View mine for the purpose of placing in position an immense air compressor. The company intends to use Burleigh drills in this mine.

SOUTHERN CROSS MINING COMPANY.—This company, since its organization 18 months ago, has opened the mine to a depth of 250 feet by a shaft, and by levels at the depths of 150 and 250 feet, extending 300 feet along the vein in the former case and 200 feet in the latter. All of these workings have been in ore. The developments of the past three months have opened a new and large ore body, which averages between $25 and $30 to the ton. The company has received overtures from several sources looking to a purchase of the mine, but it has determined to hold the property and build a large mill near the mine as soon as suitable arrangements can be perfected in conformity with plans maturing.

SILVER MOUNTAIN MINING COMPANY.—A syndicate has been formed at Butte, composed of W. G. Lewis, A. H. Barret, William Thompson, J. E. Rickards and others, to pay the debts of this company and sink a shaft 100 feet further. This will make the depth 200 feet altogether. At that depth a crosscut will be made to the walls.

NEVADA.

LINCOLN COUNTY.

YUBA.—The work of opening up this mine goes quietly forward, and every week, says the Pioche *Record*, adds to the volume of ore exposed. The latest developments are on the eighth and the 1,235-foot station. At the former place, east of the shaft, a four and a half foot breast of 200 ounces free ore is uncovered, while on the 1,235 west of the shaft, and on a separate ledge, a quantity of 100-ounce material shows up. The work of sinking the main shaft 100 feet below the twelfth level was finished a few days since, and on Wednesday the work of cross-cutting for the ledge from the thirteenth level began. It is thought the ledge will be reached at about 100 feet. This mine is depended on to furnish the bulk of the ore needed to keep the furnace going when next it operates, and to facilitate mining it, compressed air will be used, the machinery for furnishing which is now in transit. It will be stationed at the mouth of the old Burke tunnel, through which all ore will be brought after landing at the 350 station. This station is finished and a hoisting engine is in place there to be worked by steam from boilers stationed at the entrance of the Burke tunnel, and which will soon be in place.

STOREY COUNTY—COMSTOCK LODE.

The Virginia *Chronicle* says that negotiations are now pending between the controlling interests of the leading Comstock mines, headed by John W. Mackay and the representatives of the Railroad, Water and Sutro Tunnel companies. The proposition is to reduce rates of handling the ores from the time of its reduction until it is returned in bullion, at a reduction of $3 per ton below present rates.

The contract for the construction of the pumps for draining the Gold Hill mines has been let, and it is expected to have them in position by June 1st, and at the end of 60 days following that date, it is thought the Crown Point and Belcher will oe drained down to the 2,000 level, provided the incline is found in good condition.

CHOLLAR MINING COMPANY.—In the face of the east crosscut on the Chollar 750 level a breast of fine ore is developed. The crosscut has just entered this ore, which is some distance from the foot-wall of the vein; its width and importance can only be ascertained when the crosscut is further advanced, but the prospect that further explorations may result in developing a valuable body is considered promising.

OPHIR MINING COMPANY.—The ore streak developed in the raise above the 1,465 level south drift, now being followed northeasterly on the 1,300 level of that mine, is found to widen in that direction and 50 tons of fair grade have been extracted from it.

POTOSI MINING COMPANY.—The ore streak in the top of the raise above the 930 level is about 18 inches in width, and it is estimated that it will average $150 per ton, but it is not considered as important a development as that in the Chollar. The east crosscut on the 850 level of Potosi has entered a formation indicating that it is nearing the footwall of the continuation of the ore developed in the raise above the 930 level. Five other east crosscuts have been advanced to the footwall, and will soon be extended to explore the vein.

NEW MEXICO.

GRANT COUNTY.

We learn from a correspondent that the mining camp of Georgetown, New Mexico, consists of a mineral belt one mile in width by two and a half miles in length. The mines are all operated from the eastern base of the Georgetown Mountain, but could be worked from the western slope. At the eastern end of this mountain there is a belt of shale overlying the mineral-bearing limestone for the whole mile along this end of the mountain. Large amounts of silver ore have been mined and extracted from the grass roots down.

The town of Georgetown is situated at the base of the northwest corner of the mountain, which is 300 feet in height above the level of the town.

In the upheaval and folding of the strata composing the mountain numerous porphyry dykes were formed at different intervals, which can be easily traced to Hanover Gulch, where the silver belt intersects with copper and zinc. At that point the course of those dykes is S. 75 degrees W. It is very evident that the source of the ore-bodies came from the top of these dykes. The top of the mountain and western slope are covered with porphyry and limestone.

One of the mining companies owning the northwest corner of this mineral belt has encountered larger bodies of ore in the last few months than have been met with since the commencement of operations in the camp in 1872.

For many months past the company has been shipping to Socorro in car-lots. The first-class ore runs from 400 to 850 ounces in silver to the ton. The mill has not been running for several months, meantime several thousand tons of second and third class ore have accumulated at the mine and mill.

SANTA FE COUNTY.

SANTA FE MINING COMPANY.—This company needs a concentrator and railroad facilities. The first is an actual necessity, and it must be had even if the bondholders have to wait awhile for their interest. Mr. Lewisohn says he is a great believer in the ultimate value of the property, and that the unfavorable features are no greater than were first experienced in Montana.

NORTH CAROLINA.

(From our Special Correspondent.)

A company has recently been having the baryte deposits of this State investigated with a view to purchasing and working. The results of these investigations are not to be made public as yet, but it is probable that in one or two localities there are indications of considerable quantities of a very fair grade of baryte. Among the localities examined are: Cabarras County, where it occurs in small quantities associated with quartz and sulphides of copper and iron, as at the Phœnix Gold Mine, Union County, where it occurs with gneiss and has biotite disseminated through it; as at Col. Walkup's property. Madison County, near Hot Springs, where it is associated with unakyte, a flesh colored granitoid rock, consisting of quartz, orthoclase, epidote, and small grains of reddish blue fluorite; and Gaston County, Kings Mountain, interspersed with granules of quartz.

In all these localities the baryte is somewhat stained with iron, and in most cases has more or less quartz in it. The iron stains are very easily leached out with sulphuric acid, but the quartz, if present in appreciable quantities, renders it unfit for commercial purposes.

At Sandy Bottom, in Madison County, baryte mining is now being carried on. After coming from the mine the mineral is crushed to buckshot size and less, and then leached with sulphuric acid, leaving a very white fine grade of baryte.

STANLY COUNTY.

STANLY FREEHOLD MINES.—In February, Captain H. A. Judd, manager, made the unusual shipment of a nugget of gold weighing 3 pounds 1 ounce 1 pennyweight, found in the Red Hill cut, on the line of sluiceway southeast of the Orchard gravel. This cut has produced several good nuggets since, and with the 15 foot breast of clay and gravel on South Branch, there is a good outlook for some time to come.

CLEVELAND COUNTY.

According to reports, a new company has been organized to develop the tin mines at King's Mountain.

MITCHELL COUNTY.

It is reported that the Cranberry iron mines are about to pass into the hands of an English syndicate, who will build a town, erect furnaces and establish iron manufacturing plants.

OHIO.

JEFFERSON COUNTY.

There is considerable excitement at Toronto over the striking of a large oil well. It is the first real gusher ever struck in the county.

OREGON.

BAKER COUNTY.

GIROUX AMALGAMATOR COMPANY.—This company has asked from Baker City a subsidy of $25,000 for the erection and sampling works and machine shops at that place. The sum of $17,000 has been subscribed, and the whole amount assured.

PENNSYLVANIA.

COAL.

The coal operators of the Pittsburg District met on the 10th inst., and after appointing delegates to the Inter-State Convention of Miners and Operators at Columbus, Ohio, passed a resolution that they could not and would not pay a greater differential than previously existed in base scales of mining for competing districts. Nearly all pits have chosen delegates to the Columbus Convention, and nearly every one is instructed to stand for the Columbus scale.

It is stated that about 10 per cent. more of the coke ovens in the Connellsville regions will close down next Monday on account of a lack of orders.

For the past year the rate for mining in the Irwin district has been 60 cents per ton, with a yearly contract ending April 1st. For this year the miners want an advance of 15 cents per ton. The operators, however, positively refused to pay the advance, and the miners then decided to accept last year's rate, but not sign a contract for the year, as heretofore.

The Schuylkill Coal Exchange has issued a report, dated Pottsville, April 1st, which shows that the collieries drawn to return prices for coal sold in March, 1890, to determine the rate of wages to be paid, make returns as follows: Schuylkill Colliery (P. & R. C. & I. Co.), $2.18·62; Bast Colliery, $2.29·14; Shenandoah City Colliery, $2.25·30; North Ashland Colliery, $2.22·87; Big Mine Run Colliery, J. Taylor Estate, $2.26·40; total, $11.22·33; average, $2.24·46. The rate of wages to be paid for work done during the last two weeks of March and the first two weeks of April, 1890, is nine (9) per cent. below $2.50 basis.

CAMERON.—The fire in this colliery, at Shamokin, which broke out last week, on the 4th inst. was beyond control, and the entire mine was, it is said, to be flooded. It will take nearly a year to repair the damage.

NATURAL GAS.

CHARTIERS VALLEY GAS COMPANY.—The net earnings of this company for the quarter ending March 31, it is reported, were $154,000, of which amount $45,000 were set aside for the dividend declared this week. The gross earnings for the quarter were $177,000.

OIL.

Exports of refined, crude, and naphtha from the following ports, from January 1st to April 4th, were as follows:

	1890. Gals.	1889. Gals.
From Boston	608,882	834,739
Philadelphia	25,749,257	31,925,210
Baltimore	1,202,754	4,720
Perth Amboy	2,051,524	4,720,894
New York	89,412,631	103,317,227
Total exports	119,025,048	140,802,790

SOUTH DAKOTA.

LAWRENCE COUNTY.

UNCLE SAM MINING COMPANY.—All miners and mill hands employed by this company were laid off on the 1st inst. The mine was shut down. Miners were not paid for work during March, and began legal proceedings against the company. Shortly afterward the claims for wages were satisfied in full, Dr. J. A. Harding, superintendent, issuing checks bearing date April 10th, which were cashed without discount by C. H. Lewis. The total amount due was stated to be about $3,000. It is said that the bullion cleanup is valued between six and seven thousand dollars.

VULCAN SILVER MINING COMPANY.—At a meeting of the stockholders of this company, held recently in Deadwood, the following board of directors were elected for the ensuing year: Albert Pollock, J. T. Gilmore, J. H. Flynn, W. E. Adams, Julius Bruno.

PENNINGTON COUNTY.

HARNEY PEAK MINING COMPANY.—The cut in wages from $3 to $2.50 per day, which this company ordered to take effect on the 3d inst., was followed by a strike of the miners. This is the first strike of consequence by miners in the Hills.

UTAH.

JUAB COUNTY.

BULLION-BECK AND CALIFORNIA MINING COMPANY.—It is reported that the suit between the opposing parties in the Bullion-Beck mine, to which we referred in our issue of the 29th ult., has been settled out of court. The facts in the case are these: In effecting the change from the old Bullion-Beck organization to the California Bullion-Beck Company, the Hyde-Thatcher party agreed to pay over to the new concern one-quarter of the stock, or 25,000 shares, valued at $2,500,000. After the transfer, High Priest and Elder John Beck declared that his confreres had no right to handle his property in that style. So, through his influence, the arrangement was declared of no effect, and that no dividend should be paid on the stock thus transferred. The California parties sued in the Third District Court, as has already been stated in the JOURNAL, for the dividend in this stock, for an accounting on a large amount of ore taken from the mine, and for a full recognition of their rights in the premises. A prominent Salt Lake attorney has remarked that the Mormons did not dare to let the issue come to a trial, and a compromise has just been secured whereby the Californians get substantially everything they sued for.

WEST VIRGINIA.

KANAWHA COUNTY.

An Eastern syndicate, of which it is said President M. E. Ingalls, of the Chesapeake & Ohio, is a member, has purchased the old splint coal company of 640 acres, three miles above Charleston, and will lay it off in town lots, the town to be

known as Kanawha City. The price paid was $200,000 and it is said that an iron furnace will be erected there.

FOREIGN MINING NEWS.

ENGLAND.

The committee of the British Miners' Federation has adopted a resolution declaring that the question of eight hours for a day's work should form the principal point of discussion at the Labor Conference to be held in Bruxelles.

MEXICO.

A despatch from the City of Mexico says that rich opal discoveries have been made in Queretaro.

SWEDEN.

The statistics of the iron and steel industry of Sweden in 1888 show that there were 485 mines worked in Sweden for the raising of magnetic iron ore, which produced 937,000 tons, while in 1887 655 mines yielded 884,000 tons. In 1886 the number of mines worked was 726, and the output 850,000 tons. It will be seen that, while the number of mines decreases annually, the output increases. In addition to the magnetic ore, 3,000 tons of lake and bog ore were raised in the provinces of Jönköping and Kronoberg, as against 900 tons in 1887 and 500 tons in 1886. The following five provinces produced the largest quantities of ore, or about two-thirds of the output of the whole country, viz., Kopparberg (80 mines), 233,000 tons; Orebro (84 mines), 220,000 tons; Vestmanland (59 mines) 183,000 tons; Norrbotten (156 mines), 90,700 tons; and Vermland (55 mines), 87,500 tons. Compared with 1887, we find that Kopparberg län now heads the list in place of Orebro, while the province of Norrbotten, where but little ore was formerly raised, now produces about 90,000 tons, viz. from the Gellivara deposits. In the province of Upsala 55,000 tons of the famous Dannemora iron ores were raised from ten mines, against 50,000 tons in 1887. The production of ore in Sweden during the last quinquennial period 1884-88 was as follows:—1884, 890,000 tons; 1885, 855,000 tons; 1886, 850,000 tons; 1887, 884,000 tons; 1888, 937,000 tons. The number of persons employed in the iron mines in 1888 was 6,041, against 6,337 in 1887, 616 being women and children.

Turning to the Swedish pig-iron industry in 1888, we find there were 162 furnaces in blast, producing 444,000 tons. In 1887 the number was 164, making 447,500 tons, being the same number in blast and almost the same output as in 1886. Of the above quantity, 4,400 tons of castings were produced direct, as in former years. Orebro län shows the largest production, viz., 113,800 tons from 47 furnaces, Kopparberg coming close with 113,500 tons from 33 furnaces. The largest quantity of pig was made as usual at Domnarfvet Iron and Steel Works, viz., 25,800 tons, the average daily output being 18·6 tons. In 1887 the manufacture was 25,000 tons, and the daily average 17 tons. Four furnaces were in blast here. The smallest quantity of pig turned out at one works was 200 tons. The average output per furnace was 2,760 tons, against 2,600 tons in 1887. The total output of pig iron during the five years referred to was: 1884, 422,000 tons; 1885, 455,000 tons; 1886, 447,000 tons; 1887, 447,500 tons; 1888, 444,000 tons. In addition to the 4,000 tons of castings direct from the furnace, 27,700 tons were produced by re-smelting pig iron at 124 works specially established for this purpose, against 25,000 tons from 118 works in 1887. The production of this kind of iron in 1884-88 was as follows: 1884, 17,000 tons; 1885, 17,000 tons; 1886, 17,000 tons; 1887, 25,000; 1888, 27,700 tons. The number of workmen employed in this industry was 3,773, against 4,000 in 1887.

In the manufacture of bar iron in Sweden in 1888, 186 works with 525 hearths were engaged, producing 248,000 tons, or very nearly the same quantity as in 1887, when there were three works less. The four provinces showing the largest output of bars in 1888 are: Orebro, 52,800 tons (30 works); Kopparberg, 43,600 tons (19 works); Vermland, 35,000 tons (23 works); Vestmanland, 34,500 tons (14 works), the latter having assumed the place formerly occupied by Gefleborg län. At 109 works 233,000 tons of blooms were also turned out, of which 47,000 tons were roled into bars at other works. The bars were manufactured by the following methods: Bessemer, 32,000 tons (1887, 19,000 tons); Martin, 20,000 tons (1887, 14,000 tons); Walloon, 5,300 tons (1887, 6,800), Franche-Comté, 11,000 tons (1887, 12,000); Lancashire, 180,000 tons (1887, 200,000); puddled, 600 tons (1887, 300). The total make of Swedish bar iron in 1884-88 was: 1884, 266 000 tons; 1885, 261,000 tons; 1886, 232,000; 1887, 250,000 tons; 1888, 248,000 tons. The number of men employed in the bar iron industry was 6,762, against 6,812 in 1887.

The increase in the output of steel in 1888 amounts only to about 3,000 tons, while the increase in the preceding year was 33,000 tons. The increase in 1888 falls wholly upon Martin steel, the output of Bessemer being nearly the same as in 1887. There is, however, a large increase in two provinces, but a corresponding falling-off in another, viz. Kopparberg. In the present report, as well as in that for 1887, the returns of each works are, unfortunately, no longer given. The Swedish steel manufacture during the period 1884-88 was as follows: 1884, 66,000 tons; 1885, 75,460 tons; 1886, 76,182 tons; 1887, 108,760 tons; 1888, 111,530 tons. In the manufacture of steel and finished goods 8,970 men were employed against 6,636 in 1887.

Regarding manufactures of iron and steel, we find that 144 works were engaged in it, turning out 58,500 tons, against 44,000 tons in 1887. The output in the two years was: Plates, 20,000 tons, against 12,000; nails, 10,000, against 10,000 tons; 65,000 tons steel rails (none in 1887); 4,000 tons of tools and agricultural implements, against 6,000 tons, and 18,000 tons of sundry goods, against 22,000 in 1887. The production from 1884 to 1888 was as follows: 1884, 43,500 tons; 1885, 42,500 tons; 1886, 40,000 tons; 1887, 48,500 tons; 1888, 58,500 tons.

Among other items concerning the Swedish iron and steel industry in 1888, we find that in all 21,402 persons were employed in it, against 18,800 in in 1887. There were 49 accidents in mines, 21 being fatal, against 43 and 14 in 1887. The number of new licenses for working iron mines issued was 92, while 414 were renewed. The number of steam engines employed in the industry was 231, of 6,957 horse power.

As regards the metal production in Sweden in 1888, we find that gold was produced from the Falu mine, 910 tons of ore being raised; silver and lead ore, from 42 mines, 10,600 tons; copper ore, from 14, 19,000 tons; nickel ore, from 3, 1,000 tons; zinc ore, from 29, 50,000 tons; manganese, from 16 10,000 tons, and lead ore, from 2, 1,000 tons. The pure metals produced in 1888 and 1887 were as follows, those for the latter year being in parentheses: Gold, 178 pounds (196); silver, 9,460 pounds (9,776); copper, 880 tons (900); brass, 220 tons (260). In addition, 270 tons of copper goods were manufactured, 100 tons of other cast goods, etc. In these industries 4,351 persons were employed, against 4,197 in 1887.

Finally, the statistics of the Swedish coal industries for 1888 do not show an increase in output upon 1887, the totals being, respectively, 8,071,654 and 8,072,182 cubic feet. Five coalfields are being worked, producing 3,000,000 cubic feet of best coal, 1,598,000 of seconds, and the remainder third quality coal. The production during the quinquennial period 1884-88 was as follows: 1884, 7,873,000; 1885, 8,313,000; 1886, 8,134,180; 1887, 8,072,182; 1888, 8,071,654 cubic feet. These coals, being anthracite, are of no value in the iron industry, besides the fields being too far distant from the iron districts; but they are used with great advantage on the railways in the south of Sweden, where the fields are situated, special grates having been fitted on the engines in order to burn them.

In concluding our report, it may be mentioned that with 1888 these returns cease to be entered in the confusing old Swedish measures, and in future will be issued in metric figures, this system having become compulsory with 1889.—*Iron.*

ASSESSMENTS.

COMPANY.	No.	When levied.	D'l'nq't in office.	Day of Sale.	Amn't per share.
Alabama, Nev.....	1	Mar. 18	Apr- 22	May 13	.08
Bailey, Nev.....	1	Mar. 18	Apr. 22	May 13	.08
Confidence, Nev....	15	Mar. 12	April 6	May 7	.75
Crown Point, Cal...	3	Feb. 27	April 2	Apr. 21	.05
East Best & B., Nev.	1	Feb. 11	Mar. 14	Mar. 31	.25
Eureka Con., Nev..	1	Feb. 24	April 5	Apr. 21	.03
Goodman, Nev. ...	7	Feb. 15	Mar. 25	Apr. 26	.05
Happy Valley, Cal..	6	Feb. 12	Mar. 24	Apr. 14	.05
Holmes, Nev...	11	Mar. 12	Apr. 17	May 8	.25
Humboldt.....	1	Mar. 18	Apr. 22	May 13	.08
Martin White, Nev.	23	Feb. 12	Mar. 31	Apr. 30	.25
Mayflower, Cal.....	46	Mar. 8	Apr. 10	May 1	.50
Peerless.....	14	Mar. 28	May 6	May 27	.10
Potosi, Cal.....	34	Mar. 27	Apr. 30	May 21	.50
Quaker, Cal.....	18	Mar. 8	Apr. 15	May 5	.20
Standard Con., Cal.	2	Mar. 4	Apr. 16	May 19	.25
Union Con., Nev....	40	Mar. 5	Apr. 10	Apr. 30	.25
Utah Con., Nev.....	9	Mar. 11	Apr. 17	May 5	.25

MEETINGS.

American Forcite Powder Manufacturing Company, at No. 1 Broadway, New York, May 5th, at 3 P. M.

Chartiers Valley Gas Company, at the office in Pittsburg, Penn., May 3d, at 2 P. M.

Franklin Mining Company, at No. 19 Congress. street, Boston, Mass., April 16th at 12 o'clock noon.

Houghton Mineral Land and Mining Company a 76 Wall Street, New York City, April 16th, at 12 o'clock noon.

Marshall Basin Mining Company, at 77 Broad street, New York City, April 16th, at 11.30 A. M.

DIVIDENDS.

Aspen Mining & Smelting Company, dividend No. 11, of 10 cents per share, $20,000, payable April 15th at No. 54 Wall street, New York city.

Calumet and Hecla Mining Company, dividend of $5 per share on $500,000, payable May 5, to stockholders on record on April 10th.

Chartiers Valley Gas Company, dividend of one and one-half per cent., payable April 19th, by mailed check. Transfer books close on April 12th

Hecla Consolidated Mining Company of Montana, dividend No. 160, of 50 cents per share, $15,000, payable April 25th at the company's office at Hecla, Mont.

Poorman Mining Company, dividend of 4 cents per share, $2,000, payable April 20th.

Tuna Oil Company, quarterly dividend of 4 per cent., payable on demand at the office in Pittsburg, Pa.

Quicksilver Mining Company, dividend of 1¼ per cent., $64,500, on the preferred stock, payable May 1st. Transfer-books close April 16th and reopen May 2d.

MINING STOCKS.

For complete quotations of shares listed in New York, Boston, San Francisco, Baltimore, Denver, Kansas City, St. Louis, Pittsburg, Birmingham, Ala.; London and Paris, see pages 439 and 440.

NEW YORK, Friday Evening, April 11.

No marked change in the mining market is noticeable this week. "Hope springs eternal in the human breast," and sanguine brokers still murmur of certain events to happen in the near future. "There will be a revival here one of these days that will beat Moody's and Sankey's," said an optimistic dealer in stocks recently. Upon being asked his reasons for such a belief, he hem'd and haw'd, and finally ended by looking mysterious, and saying we had better keep our eyes and ears open. This is something we have been doing for some time past, but we have seen but little indication of a coming boom appearing in the mining horizon.

We should, however, note rumors of the finding of a veritable bonanza in the Comstock. Private letters report a considerable body of ore in the Crown Point and Potosi mines, which the writers express the opinion may make an old-time Comstock boom. It is quite possible that bodies of paying ore may be found there, and that they will revive interest and speculation in the Comstock; but "the glory has departed," we fear never to return. It is improbable that the mines below the level of the Sutro Tunnel will ever again be pumped out, and recent bonanzas in the upper levels have been "low grade," though profitable. This last discovery may be of the same character.

The conditions necessary for an old time Comstock craze no longer exist. The people of San Francisco are no longer all gamblers, and the history of Comstock management has killed unfaltering faith. People will not again become altogether crazy, and there are now too many other kinds of attractive investments which will share with mining the support of the boomers.

Brokers, that is a great many of them, have from time immemorial regarded the public as fools, and, as such, legitimate prey. The wild-cat schemes with high-sounding names, which from time to time have duped the credulous public, are undoubtedly to blame for the present lack of activity and interest in the local market.

That anybody should invest money in concerns which are manifestly worthless is beyond comprehension. Yet when money is lost in them "mining" is blamed. A manipulated stock seems to have some attraction for outsiders, who, dazzled by what simply "glitters," and hypnotized by the mirage of fabulous fortunes made in past years, become an easy prey to the crafty manipulators.

It is a long lane that knows no turning, but the public, at present, seems to have reached the turn, and is more cautious than of yore, in making mining investments.

Some of the members of the Stock Exchange recognize that these worthless stocks now dealt in are chiefly to blame for the existing state of affairs, and so long as these are floated by the help of the Exchange, just so long will it be impossible to revive an interest in legitimate mining

The precise change in the rules regarding unlisted stocks, adopted by the governing committee, at the Stock Exchange on the 9th inst., was as follows: Article XXV., section 3, of the Stock Exchange constitution, has previously stood as follows: "Government securities, exchange, mining shares and *securities not listed* at the Stock Exchange, are exempted from the provisions of this article," *i. e.*, the article prescribing ⅛ per cent. as minimum commission. The section is now changed so as to read: "Government securities, bills of exchange, mining shares, pipe line certificates, and all securities *which are not dealt in* at the Stock Exchange are exempted from the provisions of this article." The original wording left all unlisted stocks free from the ⅛ per cent. rule, so that less might be charged by brokers to customers. The rule now applies to these as well as to the listed stocks.

The business in Horn Silver stock has been extremely large, though prices declined to $2 on Wednesday. This was due to a sale of 5,000 shares which were thrown upon the market owing to the failure of G. K. Sistare's Sons. The stock opened at $2.40, and was firm at that price until Wednesday; since then it has ruled at from $2.25@$2.35. Only 100 shares of Ontario were sold at $41.50@ $40.50.

There was more activity in Comstocks which on the whole showed an upward tendency. Consolidated California & Virginia advanced from $5 to $5.25. Crown Point went from $2.30 to $2.50. Hale & Norcross remained at $3. Ophir went from $4.25 to $450. Sierra Nevada was the only Comstock stock which declined; it went from $2.65 to $2. Alta shows one sale at $1.45. Best & Belcher one at $3.20. Chollar, $4.25. Mexican, $3.65. Overman, $1.40. Union Consolidated, $3.40. Scorpion advanced 10 cents, from 35 to 45. Utah advanced from 80 to 85 and then declined to 70 and to-day went up to 80 cents.

Operations continue to be pushed at the different mines in the Tuscarora district, but the stocks are neglected in this market, and only a few sales are

recorded from week to week. North Belle Isle sold at $1.10. Navajo at $1.20@$1.25.

Comstock Tunnel bonds apparently were in demand, and the price advanced from $30 to $32, some 7,000 bonds changing hands. It is expected that the interest on the bonds will be paid on the 1st of May. A sale of 100 Comstock Tunnel Script is recorded at $30. The stock sold at from 15 to 18c.

There is no interest shown in the Black Hills stock; Caledonia and Deadwood were neglectsd. Father de Smet came out at 40 cents, Iron Hill at 50 cents. Homestake is quoted at $9.50.

According to reports an English syndicate is contemplating the buying of a block of Wall Street Mining Co.'s stock. This, however, did not have the effect of advancing the price, which declined from 72 to 65 cents. The transactions were very small, the sales amounting only to 3,900, while those recorded last week were 56,310 shares.

Phœnix of Arizona continues to hold its own and the price has been firm at from 85 to 90 cents. Silver King showed an upward movement and went from 35 to 51 cents.

Mutual Smelting and Mining continues at the stationary price, $1.65@$1.70. Kingston and Pembroke sold at 60 cents. Rappahannock shows no change, selling at 5 and 6 cents.

El Cristo continues to sell at the prices that have ruled for the past few weeks. The transactions amounted to 2,700 shares at from $1.40 to $1.50.

By resolution of the Committee on Mining Securities the stock of old Brunswick Mining Company has been stricken off the list to take effect on and after June 1st. The stock of the new company is being actively dealt in, and the promoters are using every effort they can to make a market for their stock and thus dispose of it before the pool expires, which will be next August.

Quicksilver Pref. has declared a dividend of $1.50 per share, and in consequence the stock advanced from $36.50 to $37.75. Common continues firm at from $6.50 to $7.

The Bodies attract no attention. Bodie Consolidated shows a sale at 60 cents. Mono at 40 and Standard at from 43 to 50 cents, assessment paid; 18 cents was paid for the stock assessment unpaid.

Sutter Creek still continues to show considerable business, and the stock appeared daily on the list at prices ranging from $1.50 to $1.60. Astoria is firm at 5 cents.

Freeland is the only stock in which any interest is shown. It was again largely dealt in, and the prices were steady at from $1.05 to $1.20, closing at the former figure to-day. Adams shows an advance of 20 cents, going from 60 to 80 cents. Chrysolite, which has entirely disappeared from sight, sold at 14 cents. Iron Silver advanced from $1.95 to $2.25. Little Chief continues to sell from 28 to 30 cents. La Crosse at 7 cents. "Little" Monitor at 2 and 5 cents.

Boston.

April 10.

(From our Special Correspondent.)

The market for copper stocks is very strong and active. The best feature is that this strength is not due to manipulation but rather to a legitimate demand for investment. The position of ingot copper is such that with the foreign surplus out of the way, which seems to be fast going into consumers' hands, there is going to be a heavy demand upon the producing mines to supply enough copper to meet the wants of our country and leave very little, if any, for export.

The feature of the week was the rise in Centennial yesterday from $18 to $23, and to-day to $25, based on good buying orders from the lake and also from New York.

For some time past, as noted in these letters, there has been a persistent bearing of the stock by parties who were supposed to have intimate relations with inside parties, and timid holders have been induced to part with their stock. A change of tactics seems now to be in order, and former sellers are the most active buyers. The developments on the property for the past few months are such as to give promise of its becoming a very valuable mine, and that at no distant period it will become a producer second to none on Lake Superior. We look to see the stock sell at $50 during the present year, unless some unforeseen disaster occurs. Calumet and Hecla has been very quiet but strong at $260. A dividend of $5 per share has been declared, payable May 15, being the second dividend this year.

Boston & Montana holds its own at $49 to $49½. There is not so much stock in the market as formerly, a large amount of it having gone into strong hands, who hold it for its dividends, one of which has just been declared of $1 per share, payable next month.

Tamarack is firm at $1.59@$1.60, with very little to be had at these prices. An order to buy a few hundred shares could not be filled without materially advancing the price.

Quincy has been in good demand this week, and orders to buy have resulted in an advance from $74 to $78.

Osceola has barely held its own at $28, but we look for higher prices for it in the near future.

The demand for Kearsarge has been fairly good the past week, but the price has sagged off a little, owing to a disposition to realize by parties who bought largely before the recent advance. The stock declined from $13 to $11⅞, with recovery to $12⅝ to-day. Like its neighbor, the Centennial, this mine is liable to be a great producer, as it has undoubtedly the Calumet lode on the property, which in time will be developed.

Franklin is better on the good outlook at the mine as well as on the improved condition of the market. Sales at $15@$15⅛.

Butte and Boston has been very quietly picked up at $14. We expect to see a rise in this stock ere many days. Allouez steady at $3@$3¼; National declined to $1¼, and Huron to $⅛@¼; Ridge sold at $1, Bonanza at 70c. to 65c., and Arnold at 40c.

Santa Fe declined early in the week to 50c., a large amount of stock being forced upon the market. Over 11,000 shares were sold in one day. Since then it has recovered on small sales to 60c., and later to-day to 70c. Sales for the week about 25,000 shares. The silver stocks continue to rule dull, but we look for more activity soon. Dunkin sold at 60c., Catalpa at 25c., Crescent at 9c. Breece in good demand at 30c.

The Catalpa mines supplied the Colorado Iron & Coal Company with 1,500 tons of iron ore during the months of February and March. At the east end of the mine silver pockets have been discovered, some eighty tons of silver ore having been mined and shipped in February, and about fifty tons for the first half of March.

3. P. M.—The market closed strong. Boston & Montana sold up to $49⅜. Quincy advanced from $77½ to $81. Kearsarge sold at $12⅜. Centennial sold at $25¾ closing; $25⅝ bid, $26 asked. A dispatch to-day says that the sixth shaft north looks richer the lower it is sunk.

By Telegraph.—Centennial, $24; Quincy, $81; Osceola, $28½; Boston and Montana, $49¼; Kearsage, $12¾; Tamarack, $160; Butte and Boston, $14¼; Atlantic, $14; Santa Fe, $70.

Denver.

April 11.

[From our Special Correspondent.]

Prices and sales during the week ending April 5th.

Company	Opening.	H.	L.	Closing.	Sales
Alleghany, Colo	28	*30	28	*29	9,800
Amity, Colo	14	14	12½	10b	11,800
Bangkok, C. B., Colo	23	23	20	20	2,300
Bates-Hunter, Colo	*23	*23	21	*22	17,000
Brownlow, Colo	33b	*40	*38	*40	2,100
Calliope, Colo	45	45	45	44b	2,900
Clay County, Colo	45a	*42	*42	38b	5,000
Hard Money, Colo	14⅛	†19	13¾	15a	53,200
Little Rule, Colo	50	50	47	45b	400
Matchless, Colo	117b	117b	100b	150a	....
May-Mazeppa, Colo	117	*122	116	117	17,700
Mollie Gibson, Colo	60a	40b	30b	40b	....
Oro, Colo	675b	650	650	1,000a	100
Pay Rock, Colo	08¼	†11	08¼	08¾	73,500
Puzzler, Colo	23	*25	22	*24b	23,300
Reed-National	40	53	40	50	26,700
Silver Cord, Colo	65a	*50b	40b	40b	....
Whale, Colo	*35	*35½	32	31	3,700
PROSPECTS.					
Argonaut	15	†17	14	*16	10,200
Aspen United, Colo	19a	18	17	16b	1,000
Big Indian, Colo	27b	*27	*27	*27	100
Big Six, Colo	*21	*24	*21	*24	1,200
Claudia J., Colo	09b	*12½	10	10b	1,800
Diamond B., Colo	13a	*15	13	*15	6,300
Golden Treasure, Colo	20	*22	20	*22	4,300
Ironclad, Colo	22b	‡25½	18	18	8,200
John Jay, Colo	25a	*24	22½	*21¼a	1,700
Legal Tender, Colo	10¼a	*11	10	10	34,400
Morning Glim, Colo	44b	46	46	43b	600
Natural Gas & Oil. Co	18b	*21	18	17b	6,200
Potosi, Colo	31	31	29	31	4,000
Rialto. Colo	14⅛	14½	14	10b	200
Total for the week					329,700

*Buyer 30. †Buyer 60. ‡Seller 60. §Seller 30.
a Asked. b Bid.

Lake Superior Iron and Gold Stocks.

(Special Report by David M. Ford, Houghton, Mich.)

Gold Stocks.—In the stocks of the gold mines not much change is anticipated in prices or in the developments of the mines for the next 30 to 60 days, as they are waiting the going off of the snow before commencing active operations.

Iron Mines.—These mines are all hard at work getting out ore as fast as possible and getting it on the stock piles, though some of the mines have already commenced shipping ore from mines to the ore docks ready for shipment in vessels as soon as navigation opens. There is not much of general interest or out of the usual run of mining operations taking place. As soon as navigation opens this will all be changed and greater activity prevail than has ever existed in the Lake Superior country.

GOLD MINING STOCKS.

Name of Company.	Par value.	Lowest.	High.
Gold Lake Mg. Co	....	....	$1.00
Grayling Gold & Silver Co	$25.00	....	1.00
Michigan Gold Co	25.00	$2.50	3.50
Peninsula Gold & Silver Co	25.00	....	.75
Ropes Gold & Silver Co	25.00	2.25	2.75

IRON MINING STOCKS.

Name of company.	Par value.	Bid.	Asked.
Ashland Iron Co	$25.00	$55.00	$65.00
Aurora Iron Co	25.00	7.50	8.00
Champion Iron Co	25 00	$100.00	105.00
Chandler Iron Co	25.00	40.00	41.00
Chapin Iron Mining Co	25.00	30.00	33.00
Chicago & Minn. Ore Co	100.00	110.00	115 00
Cleveland Iron Co	25.00	18.50	19.50
Germania	25.00	11.50	12.50
Jackson Iron Co	25 00	120.00	125.00
Lake Superior Iron Co	25 00	67.00	68.50
Milwaukee Iron Co	25.00	6.50	7.50
Minnesota Iron Co	100.00	83.50	85.00
Montreal Iron Co	25.00	9.00	10.50
Norrie (Metropolitan)	25.00	75.00	80.00
Odanah Iron Co	25.00	20.00	22 00
Pittsburg Lake Angeline Co	25.00	170.00	175.00
Republic Iron Co	25.00	48.50	49.50

Minneapolis.

Company.	Bid.	Asked.
Anglo-American Mg. Co	....	2.00
Badger Mg. Co	....	10.00
Bear View S. Mg. Co	....	.50
Bessemer Consol. I. M. Co	....	1.00
Black Hills Tin M. Co	.55	1.00
Derwood Consol. M. & M. Co	....	.35
Getcagumee G. & S. Mg. Co	.15	.50
Gogebic Iron Mg. Co	....	12.00
Iron Duke Mg. Co	....	4.00
La Belle Mg. Co	....	3.00
Montana Central Placer Mg. Co	....	1.00
Mount Ætna G. & S. Mg. Co	....	2.00
Northern Belle G. & S. Mg. Co	....	.30
Thunder Bay G. & S. M Co	56.00	....
United Iron & Land Syndicate	....	6.50
White Spar Mica Mg. Co	....	1.00
York Iron Works	....	40.00

Prices bid, asked and closing during the week ending April 8th.

Electric Stocks.

It has been stated that Henry Villard has secured the whole issue of the new securities of the Thomson Houston Electric Company. He pays only $25 per share, though the real value of the stock ranges between $40 and $50. Mr. Villard, in return for this, it is said, agrees to take care of the indebtedness of the company, which is some $3,000,000.

Mr. Edison has been at Boston as the representative of the Edison Electric Light Company, and this new arrangement is reported to mean the consolidation of the Thomson-Houston and Edison companies. Rumors of such a combination have been current for some time, but not until now was the manner in which it was to be brought about known.

Trust Stocks.

The National Lead and Oil Company, of New York, on the 9th inst., filed a consolidation certificate with the County Clerk. This trust has a capital of $1,000,000. which is apportioned as follows: The Jewett White Lead Company, of Port Richmond, $250,000; Brooklyn White Lead Company, $180,000; Lenox Smelting Company, of Brooklyn, $50,000; Ulster Lead Company, of Saugerties, $150,000; Union White Lead Manufacturing Company, of Brooklyn, $70,000. The trustees are William P. Thompson, John G. Steenken, Benjamin C. Webster, Alfred T. Goshorn, R. P. Roe, and Romulus R. Colgate.

PIPE LINE CERTIFICATES.

(Specially Reported by Messrs. Watson & Gibson.)

The petroleum market has hung around 80 cents this week, but with the usual perversity of speculative markets, it advanced a point or so on the publication of the figures for March receipts and shipments. For the first time in two years these figures show no decrease on visible supply and the expectation of this fact has been pretty generally discounted. The price of Ohio oil is 30 cents, or higher than it has been for three years. It is undoubtedly being used by the refining companies for the manufacture of illuminating oil.

Speculation in crude petroleum is a lost art; only a few old operators hover around the bull ring. Brokers are carrying no certificates. The Standard evidently have absolute control of both the Ohio and Pennsylvania product.

A press dispatch from Findlay, O., of the 10th, states that Ohio oil was given another upward whirl to-day. An advance of two and one-half cents was posted at the Buckeye Pipe-Line Company's office this morning, making the price 30 cents. The news spread rapidly through the city and out into the country where operators are at work, creating the greatest excitement known here since oil was discovered. For three years Ohio oil has been held down to 15 cents. The Standard Oil Company has been buying up leases and titles in fee simple to all the developed oil lands it could get until its actual investments in Northwestern Ohio now amount to several million dollars. Storage tanks were removed from the abandoned Pennsylvania fields, and having got everything in readiness, with great pipe lines to Cleveland and Chicago and large refineries in operation, the Standard six weeks ago suddenly advanced the price to 20 cents. On Tuesday of this week the price was put up to 27½ cents, and to-day it reached 30. The last advance was forced by the Sun Oil Company, which set this price and acquired the production of some large wells right where the Standard thought it had shut the rival company out.

It is now confidently predicted that the price will go to 40 cents by May 1 and be made certificate oil by June 1, in which event a large exchange will be opened in this city. Oil operators are flocking to this field from all points, and the leasers are eagerly taking up land wherever there are any prospects of finding oil. Those who have producing wells are wild with excitement, as the value of the product has been doubled. Some wells are now making the owners from $200 to $500 clear profit every twenty-four hours.

The Sun Oil Company this evening advanced the price to 32½ cents, which will doubtless soon be met by the Standard.

NEW YORK STOCK EXCHANGE.

	Opening.	Highest.	Lowest.	Closing.	Sales.
April 5.....	81⅝	81⅝	81¼	81⅝	30,000
7.....	81	81	80	80	64,000
8.....	79½	80⅝	79½	80½	120,000
9.....	80⅝	80⅝	79¾	79¾	75,000
10.....	79¾	80⅝	79¾	80⅝	112,000
11.....	80½	82	80¾	80½	235,000
Total sales in barrels.....					636,000

CONSOLIDATED STOCK AND PETROLEUM EXCHANGE.

	Opening.	Highest.	Lowest.	Closing.	Sales.
April 5.....	81⅝	81½	81⅛	81½	32,000
7.....	84¼	81¼	80	80½	188,000
8.....	79¾	80¾	79⅝	80⅝	232,000
9.....	80⅝	80¾	79½	79⅝	169,000
10.....	80½	80¾	80	80¼	169,000
11.....	80⅝	82¼	79⅞	80	385,000
Total sales in barrels.....					1,175,000

COAL TRADE REVIEW.

NEW YORK, Friday Evening, April 11.

Statistics.

Mr. John H. Jones, chief of the Bureau of Anthracite Coal Statistics, furnishes us the following statement of shipments of anthracite coal (approximated) for the week ending April 4, 1890, compared with the same period last year:

Regions.	April 4, 1890.	April 5, 1889.	Difference.	
Wyoming Region.Tons	252,571	242,333	Inc.	10,238
Lehigh Region ... "	98,386	96,160	Inc.	5,226
Schuylkill Region. "	166,442	163,466	Inc.	2,975
Total.....	517,399	501,959	Inc.	18,439
Total for year to date..	6,672,621	7,322,214	Dec.	649,593

PRODUCTION OF BITUMINOUS COAL for week ending April 4th and year from January 1st:

EASTERN AND NORTHERN SHIPMENTS.

Tons of 2,240 lbs.	1890. Week.	1890. Year.	1889. Year.
Phila. & Erie R.R.....	983	33,552	24,328
Cumberland, Md.....	63,253	975,505	756,588
Barclay, Pa.....	2,856	37,229	34,003
Broad Top, Pa.....	9,364	146,350	112,356
Clearfield, Pa.....	61,146	1,075,035	762, 556
Allegheny, Pa.....	17,304	388,577	205,651
Beach Creek, Pa.....	36,254	502,215	395,471
Pocahontas Flat Top.....	44,913	475,737	404,582
Kanawha, W. Va.....	64,372	553,975	457,522
Total.....	300,445	4,188,175	3,253,057

WESTERN SHIPMENTS.

Pittsburg, Pa	20,584	244,390	162,516
Westmoreland, Pa.....	18,704	476,889	414,673
Monongahela, Pa.....	4,124	53,692	42,686
Total.....	43,412	774,971	619,875
Grand total.....	343,857	4,963,146	3,872,932

PRODUCTION OF COKE on line of Pennsylvania R. R. for the week ending April 4th, and year from January 1st, in tons of 2,000 lbs.: Week, 105,900 tons; year, 1,511,548 tons; to corresponding date in 1889, 1,204,681.

Anthracite.

Each succeeding day finds the anthracite coal trade in an improved condition. Perfect harmony is said to prevail among the producers as to the restriction (on paper) of output, and they are nearly all asking the same prices. Consumers are beginning to realize that prices have about reached bottom, and they are slowly coming into the market.

The question now agitating the trade is the probability of a reduction in railroad tolls on coal. For some time the individual operators have been clamoring for such a reduction, but the railroad companies seem indisposed to concede any. They argue that the present rate of tolls is the same as was in effect last spring, and if a reduction were made the individual operators would only give it to consumers by further cutting the prices; on the other hand, the individual operators complain that the present prices of coal are so low that they will be compelled to shut down their mines and suspend operations unless some concession is granted them by the transportation companies. A reduction, they claim, would greatly increase the consumption of coal and ultimately insure higher prices. With this difference of opinion, it is not surprising therefore that the meeting of the sales agents and the representatives of the different coal-carrying companies on the 10th inst. was adjourned without anything being done.

The announcement of "spring prices" has been too long delayed, and the uncertainty is demoralizing to the market. Prices are "nominal," but the railroads still continue to charge exorbitant freights. What they lose on one hand they make on the other.

We quote f.o.b.: Broken, $3.40; stove and egg, $3.50; chestnut, $3.25; and pea and buckwheat, $2.80 and $2.20 respectively.

Bituminous.

Nearly all the large orders have now been taken, and the companies are settling down to the old routine of business. The present tonnage corresponds very favorably with that disposed of at this time last year, and from present indications it will not fall much, if any, behind. The producers expect to see within a short time the same prices ruling as those of last month, which were certainly all that could be desired; $3.50 alongside is a figure that one of the companies claims to be receiving.

The suit of R. B. Wigton & Sons, of Phiadelphia, Pa., against the Pennsylvania Railroad Company, to recover "treble the amount, with interest, of the undue, unreasonable, excessive, and unlawful charges" for the carrying of coal from plaintiffs' mines, was decided on the 5th inst., by Judge Biddle, in Common Pleas Court, Philadelphia, against the firm. The decision says "that the provisions of the act of Assembly of June 4th, 1883, so far as they attempt to regulate the charges of freight transported from this State to foreign countries or to other States, to be unconstitutional and void, as being within the exclusive jurisdiction of Congress and forbidden to the States, as declared by the Supreme Court of the United States."

Boston. April 10.

(From our Special Correspondent.)

It is refreshing to report that there is some business stir in the authracite branch of the coal market here. There was more business done last week than this, but there is more activity now than for a long time. Several large dealers here have bought good blocks of coal, say from 10,000 to 15,000 tons, while a greater number have bought from 2,000 to 4,000 tons. Such signs of confidence on the part of leading dealers have naturally aroused the whole market, and those who have not bought are wondering if they ought not to do so. The purchases have been almost wholly of stove coal, which is more plenty than any other size, and fully as cheap. Broken coal is hard to get, and is firmly held at $3.50 f.o.b. at New York. The reason, or at least one reason, why the movement in stove coal has taken place is that the companies have put away all pretense, and have made a price which was attractive, namely, $3.50 f.o.b. at New York. This is a low price, and it is certain that not much money is to be lost on coal so bought. The circular price of $3.65 is purely nominal.

Not only have the companies made this low price, but the Philadelphia & Reading and the Delaware & Hudson, and middlemen handling other coals, have made delivered prices of $4.10 to $4.15 on much of the coal sold. This tendency to sell anthracite coal delivered is the most marked feature of the times in this market.

Both the companies named have barges and are building more. Some old heads in the trade predict that before long the bulk of anthracite coal sold to Boston trade will be at a delivered price just as it now is along the Sound.

It is claimed that sales at these low figures are for April delivery only, but while companies will not guarantee May deliveries at these figures some of them have taken contracts which will not be filled in April.

In bituminous coal only small contracts remain unclosed. The nominal price is $2.50 f. o. b., which is considered a good figure to start on as a basis for cutting.

Freights are a trifle firmer at former low figures, viz., New York, 65@75c.; Philadelphia, $1.00@$1.05; Baltimore, $1.10. Quite a number of cargoes have been shipped from New York at 60 cents, and a few large vessels at 55 cents. I hear of one cargo of 2000 tons shipped at 50 cents freight. This was exceptional, of course. The vessel could not pass through bridges. It came to C. A. Campbell, and, I am told, was loaded with stove coal at $3.50 f. o. b. A pretty cheap cargo, was it not?

This disposition on part of shippers to make delivered prices on anthracite leads to more season chartering of vessels than usual.

Retail trade is dull. Prices are weak, and the weakness would be more noticeable if it were not for the combination. When stove coal can be bought at $3.50 f. o. b., $5.75 is a pretty stiff retail price, and doubtless a reduction will be made if low wholesale prices continue.

Receipts of coal at this port for the week, which show a decided increase in anthracite, are as follows:

	For the week. 1890.	For the week. 1889.	For the year. 1890.	For the year. 1889.
Anthracite (tons).....	30,358	7,206	223,509	197,823
Bituminous...	21,920	18,338	215,119	207,076
Total	52,278	25,544	438,628	404,899

Buffalo. April 10.

[From our Special Correspondent.]

Locally there is but little to say relative to the anthracite coal trade of Buffalo. Trade dull and prices unchanged. The trouble relative to freight charges on coal from the mines is not settled yet, but when this is done doubtless the spring business will commence in earnest.

Bituminous coal without any changes nominally. The market is kept on the *qui vive* by the effort made to prevent car service charges for demurrage, and this fact keeps prices down. The supply arriving is fully adequate to the demand, which is brisk in consequence of the wants of propellers, etc., navigation being fully resumed. Coke quiet and unchanged.

Mr. T. Guilford Smith, of this city, the well-known coal merchant, was nominated last Tuesday for Regent of New York State University, to the great satisfaction of all who know him personally and with pleasure to the citizens generally. The united support of the whole press of Buffalo was accorded him. The nomination is equivalent to an election.

Yesterday news came from Albany that the Assembly would not allow the third reading of the $500,000 Canal Improvement bill.

Notwithstanding the Mayor of Buffalo and two carloads of influential merchants and others appeared before the Assembly Cities Committee to protest against the bill giving the use of the waters of Skaneateles Lake to the people of Syracuse for domestic and other purposes, it was reported favorably with only one dissentient voice. If this bill passes the Legislature, the only hope left will be that Gov. Hill will veto it. The enforcement of the provisions means the entering wedge to ruin the Erie Canal.

Navigation between Buffalo and Chicago was reopened April 8th by the propeller "Aurora," coal laden, from this port April 3d, passing the straits. Last year the first vessel passed up April 6th and down April 9th. Lake commerce is fully resumed here; many vessels have arrived and cleared (see coal reports subsequent). It was expected that the Chicago and Milwaukee down fleets would leave yesterday, which makes the possibility of a large port list here next Sunday and Monday. Severe storms here of wind, hail and rain yesterday afternoon.

The North Side coal unloaders at Chicago have adopted last year's scale of prices, viz.: 12 cents for hard and 14 cents for soft; 10 hours, or if necessary 11 hours to constitute a day's work; overtime after 11 hours, 50 cents per hour.

The contracts for the grading and masonry of the Buffalo & Geneva Railroad have not been awarded yet. The light work is to be completed by end of May and the heavy work by September 1, 1891, to give time for ballasting, tracklaying, etc., previous to opening May 1, 1892.

The Pennsylvania Railroad Company have asked for bids on steel freight cars for handling coal and ore.

From the opening of navigation to April 9th, inclusive, the shipments of coal by lake from this port aggregates 14,860 net tons, namely: 5,840 to Chicago, 4,000 to Milwaukee, 2,830 to Toledo and 2,190 to Racine. The rates of freight were: to Chicago, 50c; to Milwaukee, 50c.; to Racine, 50c; to Toledo, 30c.; to Kenosha, 50c.

Chicago. April 9.

(From our Special Correspondent.)

Coal.—The Chicago coal market shows no change at all this week; the chronic complaint of dull business is everywhere heard. The supply and demand of bituminous coal was about even; the same may be said as to anthracite. We continue to quote as follows: For anthracite at retail, $5.75@$6 per ton; large and small egg, $4; range and chestnut, $4.75 on dock, on wheels 25c. additional.

Pittsburg. April 10.

(From our Special Correspondent.)

Coal.—The market continues to drag along slowly, presenting no feature worthy of special mention. A shut-down of most of the mines in the pools may be looked for at any time. The week's shipments were: For Cincinnati, 833,000 bushels; Louisville, 1,311,000 bushels; total, 2,144,000.

The nominal prices are:

Per 100 bushels.		Per 100 bushels.	
1st pool.....	$4.75	3d pool.....	$3.90
2d pool.....	1.50	4th pool ...	3.25

Railroad coal, $5.00@$5.50.

Connellsville Coke.—The situation in the Connellsville regions does not appear as favorable as last week. The demand for coke has fallen off, consequently a large number of ovens have closed and others are preparing to do so, as the supply exceeds the demand. The week's shipments, 6,950 cars; decrease, 170 cars. Shipments to points west of Pittsburg, decrease, 200 cars. Shipments east of Pittsburg, increase, 30 cars. Shipments to Pittsburg, 1,625 cars, same as last week. Output for the region, 125,100 tons; decrease from previous week, 120 tons. Some of coke works are again talking strike.

Current rates: Furnace f.o.b. on cars at works $2.15; Foundries, $2.45; Crushed, $2.65. Freights show no change. Pittsburg 70c.; Mahoney and Shenango Valley, $1.35; St. Louis, $3.05; Chicago, $2.75; Cleveland, $1.70; Cincinnati, $2.65; Louisville, $3.20.

FREIGHTS.

Reduction of Freight Rates on Iron.

The Central Traffic Association, at Chicago, has passed the following resolution: "*Resolved*, That rates on iron and iron articles, as per revised list, be made on the basis of sixth class in carloads and fifth class in less lots, to take effect on April 17, and apply between all points in the Central Traffic Association territory; these rates to remain in effect until September 1, next." The reduction is one class in each case, amounting to about 15 per cent. in rates, and applies on all iron articles.

From Baltimore to: Bath, Me., 1.10; Boston, Mass., 1.10; Brooklyn, 1.05; Fall River, 1.10; Galveston, 3.00; New Bedford, 1.05; New Haven, 1.05; New London, 1.05; New York, N.Y., 1.00@1.05; Portland, 1.10; Portsmouth, N. H., 1.15; Providence, 1 05; Quincy, 1.10; Salem, Mass., 1.10; Somerset, 1.05; Williamsburg, N. Y., 1.05@1.10.

From Philadelphia to: Alexandria, †.85; Annapolis, †65; Baltimore, †.60; Bath, Me., †1.05@†1.15;

Beverly, †1.00@1.10; Boston, †1.00@†1.10; Brooklyn, †90; Cambridge, Mass., †1.15@1.15; Cambridgeport, †1.05@1.15; Charleston, .70; Charlestown, †1.05@†1.15; Chelsea, 1.00@1,10; Com. Pt., Mass., †1.05@1.15; E. Boston, †1.00@1.10; E. Cambridge, †1.05@†1.15; Fall River, †1.00; Gardner, Me., †1.00; Georgetown, .85; Gloucester, †1.05@†1.15; Lynn, 1.10@1.20; Marblehead, †1.05@†1.15; New Bedford, †1.00; Newburyport, 1.20@†1.25; Newberne, .90@1.00; New York, †.90; Norfolk, Va., †.65@†.70; Portland, †1.00@†1.10; Portsmouth, Va., †.65@†.70; Portsmouth, N. H., †1.05@†1.15; Providence, †1.00; Quincy Pt., †1.10@†1.20; Richmond, .80@.90; Roxbury, †1.00; Salem, †1.00@†1.10; Savannah, †.80@.90; Somerset, †1.00@†1.05; Washington †.85; Weymouth, †1.05@†1.15.

* And discharging. † Alongside. ‡ And towage.

METAL MARKET.

NEW YORK, Friday Evening, April 11.

Prices of silver per ounce troy.

Apr	Sterling Exch'ge	Lond'n Pence.	N. Y. Cts.	Apr	Sterling Exch'ge.	Lond'n Pence.	N. Y. Cts.
5	4.86½	43⅞	95¾	9	4.87¼	44	96⅛
7	4.86½	43⅞	95¾	10	4.87½	44⅛	96⅛
8	4.87	44	96	11	4.87	44¼	96¾

A New Philadelphia Mint.

The House Committee on Public Buildings and Grounds are now considering and getting into shape the bill for a new mint in Philadelphia. It will call for an appropriation of $2,000,000. It is now believed that $1,000,000 can be obtained for the old mint and the ground on which it stands. In fact, an offer of this amount has been made for it.

Foreign Bank Statements.

The governors of the Bank of England at their weekly meeting on Thursday reduced its rate for discount from 3½ to 4 per cent. During the week the bank lost £449,000 bullion, and the proportion of its reserve to its liabilities was raised from 41·23 to 43·90 per cent. against an advance from 39·10 to 41·70 per cent. in the same week of last year, when its rate for discount was 3 per cent. The bank, on the 10th inst., gained £10,000 bullion on balance. The weekly statement of the Bank of France shows losses of 6,300,000 francs gold and 2,525,000 francs silver.

Domestic and Foreign Coin.

The following are the latest market quotations for American and other coin:

	Bid.	Asked
Trade dollars	$ .76	$ 78
Mexican dollars	.70	.76
Peruvian soles and Chilian pesos	Nom'al.	Nom'al.
English silver	4.83	4.88
Five francs	.94	.95
Victoria sovereigns	4.86	4.88
Twenty francs	3.86	3.90
Twenty marks	4.74	4.78
Spanish doubloons	15.55	15.70
Spanish 25 pesetas	4.82	4.88
Mexican doubloons	15.55	15.70
Mexican 20 pesos	19.50	19.60
Ten guilders	3.96	4.00
Bar silver	.96¾	.97½

Copper.—The market continues firm and in a healthy condition. In Lake brands nothing can be bought below 14⅜-½. Deliveries are still going on at a very satisfactory rate, and it is understood that at the rapidly approaching opening of navigation very light stocks will remain at the Lakes, as large shipments are already being made to various consumers. Inferior grades are still ruling at comparatively cheap prices, with refined Arizona brands quoted 13¼@⅝, and casting sorts 12⅝@¾.

In Europe trade is reported to be somewhat slacker, and smelters are more disposed to operate very cautiously. The banker holders refuse to sell G. M. B. sorts at present quotations, but it is reported that they are offering furnace material at moderate prices.

Chili Bars have recently been about the cheapest copper in the European market, and the stocks of same in Liverpool and Swansea have now fallen under 20,000 tons, which is a less total than for many years past. At the same time large quantities of G. M. B. copper still remain in the European warehouses, part of which consist of very inferior sorts. In addition to this the quantity of Chili Bars piled up in French ports still amounts to the enormous total of about 30,400 tons.

During the past week the London market for Chili Bars has developed rather a weaker tendency, opening on Tuesday (after the Easter holidays) at £48@£48 2s. 6d. spot, and £48 5s.@£48 7s. 6d. 3 months. Prices have since gradually declined, and the closing prices to-day, as received by cable, are £47 10s.@£47 12s. 6d. spot and £47 15s.@£47 17s. 6d. 3 months. For manufactured and refined kinds we have to quote: English tough, £52 10s.@£53. Best selected, £54 10s.@£55. Strong sheets, £60@£61. India sheets, £58@£59. Yellow metal, 6c. per lb.

The exports of copper from New York during the last week were as follows:

To London.	Copper.	Lbs.	
By S. S. Parkfield	11 casks.	13,750	$2,000
To Liverpool.			
By S. S. Germanic	6 casks.	7,500	1,000
To Hamburg.	Copper matte.		
By S. S. Italia	2,189 bags.	242,881	17,000
To Liverpool.			
By S. S. Italia	3,959 sacks.	436,789	19,400

Tin.—After the interval of the holidays the London market opened at £90 2s. 6d.@£90 5s.; spot and £90 17s. 6d.@£91 2s. 6d. futures. Since then, however, the market has become considerably depressed and prices have declined to £88 15s.@£89 spot, and £89 10s. to £89 15s. three months, being the closing prices to-day and the lowest figures of the week.

Heavy arrivals and the flatter tendency of London did not fail to influence values on this side, and yesterday some sales took place at 19·85, whilst the closing prices to-day are 19·60 spot, 19·60 April, 19·65 May, 19·65 June. At these low prices the trade is absorbing large quantities, and as shipments to this side are now very small a healthier condition of affairs is likely to set in before long.

Lead.—The condition of the market remains dull and depressed, and the amount of business doing is principally of a retail character. Had there been any pressure to sell, no doubt values would have declined further; but in the absence of any such pressure we have to quote nominally 3·85 to 3·90 spot.

The question of imposing a tariff on Mexican silver-lead ore is still a "burning question," though it does not affect prices. Nearly all (we believe all but two) of the Colorado and larger Eastern lead smelters are now in favor of free Mexican ore, and the silver miners of Colorado (who have the most to gain by it, but who have allowed themselves to be used as cat's paws to pull the chestnuts out of the fire for a few carbonate mine owners) are at last commencing to realize their interests. Colorado is waking up, and is beginning to recognize the fact that her interests as a silver producer in having free fluxing ores.

The European markets are about the same as last week, with Spanish lead quoted £12 10s. and English £12 15s. in London.

The Chicago Lead Market.—Messrs. Everett & Post telegraph us as follows: "There has been little change in values since our last report, and business has been extremely light. At the close we call the market 3.70@3.75c. asked."

The St. Louis Lead Market.—Messrs. John Wahl & Co. telegraph the following: "Lead is dull and demand is unusually light. Buyers' views are generally lower than those of sellers, and, consequently, transactions are few and far between. We quote common lead at 3·65., argentiferous lead at 3·70c.

Spelter.—A decidedly improved demand is apparent, but this has not yet resulted in a change in quotations, which continue rather irregular at 5@5·10c. New York.

Antimony.—Demand continues good and firm. Advices from England have strengthened the market here considerably, and we have now to report Cookson's inquired for at 27@28c. with Halletts' not obtainable below 19¼@¼. Supplies of both brands are exceedingly limited, and the English producers are known to be entirely sold out for this month.

Quicksilver.—We report an unchanged situation in this metal. Quotations continue $49.50 for New York, and £9 10s. in London.

Nickel.—Dealers' quotations for nickel are 75 cents. It is probable, however, that a lower price would be accepted if a large order were given.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, April 11.

Steel Rails.—There is not much doing in steel rails so far as the Eastern market is concerned. In Pittsburg there seems to be just now some activity. The Edgar Thompson Works recently sold some 20,000 tons to the C., B. & Q. Railroad, and the Pennsylvania Railroad has lately placed order, amounting to 40,000 tons in various concerns along their line. Quotations at Eastern Mills $34, but it is possible that from 50 cents to $1 below this figure would sorely tempt some makers.

Pig Iron.—The event of the week has been the reduction of $1 in the price of iron, made by manufacturers of standard grades of Pennsylvania brands. These had held out against the Southern competitors, but have at last come down. It is rumored that the reduction will not stop here and that a further cut of a dollar will soon be made. On the whole the condition of the pig iron market does not differ materially from our reports during the past few weeks. Dealers say that they expect lower prices between now and July, but that after that time the price of pig will go up. Reports from Cincinnati would indicate that sales of iron have been very heavy, but from all sides come the same report that prices are weak and manufacturers timid in making purchases.

The fact is simply that the production outruns consumption and that stocks are accumulating, while as prices decline and the margin of profit declines, some furnace companies become less able to hold the iron off the market and the pressure to sell naturally depresses prices and the whole tone of the market. The consumption of iron is large, and were it not for the great increase in the production of pig iron, the market would now be in good condition. Stocks, though increasing, are not large and should create no anxiety.

We quote this week for Northern brands, No. 1 X foundry iron, $18@$19, No. 2 X foundry iron, $17@$18. Gray forge is practically undealt in in this market. We quote nominally $15. For the Southern products prices range for No. 1 $17@$18, and for No. 2 $16@$17.

On pig-iron for the West, the Southern Railway and Steamship Association has issued Tariff No. 10 to take effect on April 16th. To the leading points the figures are as follows:

To	From Birmingham, Ala.	Chattanooga, Tenn	Sheffield and Florence, Ala	Anniston, Ala.	Cedartown, Ga.	Rising Fawn, Ga.
Akron, O.	$4.10	$3.60	$3 85	$4 10	$4 10	$3.85
Atchison, Kan.	5 14	5.14	4 69	5.14	5.64	5.14
Chicago, Ill.	4 10	3.85	3.85	4.35	4.35	4.10
Cincinnati, O	2.85	2.35	2.60	2.85	2.85	2.60
Cleveland, O.	4 10	3.60	3.85	4.10	4.10	3.85
Columbus, O.	3 60	3 10	3.35	3.60	3.60	3.35
Detroit, Mich.	4 10	3.85	3.85	4 35	4.35	4.10
E. St Louis, Ill.	3 35	3.10	2 90	3.35	3.60	3.35
Fort Wayne, Ind	3.85	3.60	3.60	4.10	4.10	3.85
Kansas City, Mo	8 14	5 14	4.69	5.14	5.64	5.14
Louisville, Ky	2.60	2.35	2.35	2.85	2.85	2.60
Memphis, Tenn.	2.10	2.10	1.65	2.10	2.60	2.19
Milwaukee, Wis	4.50	4.25	4.25	4.75	4.75	4.50
Omaha, Neb.	5 14	5.14	4.69	5.14	5.64	5.14
Pittsburg, Pa	4.50	4.00	4.25	4.50	4.50	4.25
Springfield, Ill.	4.10	3.85	3.85	4.35	4.35	4.10
Steubenville, Ill.	4.50	4.00	4.25	4.50	4 50	4.25
St Louis, Mo.	3.35	3 10	2.90	3.35	3 85	3.60
Terre Haute, Ind	3.60	3.35	3.35	3.85	3.85	3.60
Toledo, O.	4.10	3.60	3.85	4.10	4.10	3 85
Wheeling, W Va	4.50	4.00	4.25	4.50	4.50	4.25

The rates are on carload lots of not less than 17½ tons of 2,268 pounds.

Scotch Pig.—There really seems to be little necessity for quoting this article. Sales of any extent are unheard of, and prices quoted appear to be merely nominal.

Spiegeleisen and Ferromanganese.—The market in both of these articles is generally quiet. Dealers' quotations are $34 for 20 per cent. spiegel and $85@$90 for ferromanganese.

Merchant Steel.—Business in merchant steel is good and seems to have picked up somewhat during the past few weeks. Quotations remain for best English tool steel, 15c. net; American tool steel, 7½@10c.; special grades, 13@20c.; crucible machinery steel, 5c.; crucible spring, 3¾c.; open-hearth machinery, 2¾c.; open-hearth spring, 2¾c.; tire steel, 2¾c.

Structural Iron and Steel.—There seems to be a downward tendency in structural iron. There is not much doing at the present time, although manufacturers are generally hopeful about the future. We quote: Universal plates, 2·25; bridge plates, 2·20; angles, 2·20; tees, 2·65; beams, 3·10.

Rail Fastenings.—The market continues exceedingly dull. We give quotations which are nominal. There is but little doubt that buyers sould obtain more satisfactory prices. Spikes, 2·25c., angle fish-plates, 2·15@2·25c.; bolts and cquare nuts, 2·85c.; hex nut, 1c., free on board steamer.

Chicago. April 9.

[From Our Special Correspondent.]

The Chicago iron market remains in a very unsettled condition. Some predict that it must remain so for some time to come, while others contend that the present prices are near the bottom. Buyers are careful and continue to hold off, afraid of something they apparently expect to come. Those used to ordering carload lots are now buying for immediate needs. It is stated that there are at the present time some hundreds of thousands of tons of Lake Superior ores lying tied up at Lake shipping ports for want of room and no demand for the ore. "Bears" also claim the output to be much in excess of the demand. If such be the case the overproduction must exercise an important influence on near future prices. Bulls, on the other hand, look toward the immense building interests of the country to open up a vast demand for iron and steel.

During the past week large lots have been moved at prices not made known; but it appears certain that mills and furnaces are not refusing offers any where within reason. The situation appears to be critical. Southern iron is down to within a dollar of the lowest price ever known. Lake Superior charcoal apparently held quite firm at quoted prices. In the immediate Chicago market quantities offered are not so large. Lake Superior charcoal is obtainable at $21.50 cash, Chicago; the best Ohio softeners are firmly held; silvery irons are off $1 per ton as compared with January figures.

Pig Iron.—We quote to-day for cash per ton for delivery in cars or boat here: Lake Superior charcoal, Nos. 1 and 2; Lake Superior for car wheels No. 3 and Lake Superior for malleable No. 4 and 5 at $21.50@$22. No. 1 Lake Superior coke Bay View, $18; No. 2 Lake Superior coke Bay View, $17, and No. 3 Lake Superior coke Bay View at $16.50. No. 1 Scotch, according to brand, $26@$27. No. 1

American Scotch Ohio black brands, $21.25@$22 American Scotch-Milwaukee, $18; No. 1 Silvery, Milwaukee, $20@$21; No. 1 Silvery, Jackson County, $18.50@$19; Ohio, Jackson County, softeners, $17.50@$18; Ohio (Hanging Rock), softeners, $18.50@19.50; No. 1 Southern coke $17@$17.50; No. 2 Southern coke, $16.50@$17; No. 3 Southern coke, $16@$16.50; gray forge, $15.50; Southern charcoal, $19@$19.50; Standard Southern car wheel, $25@$26; Bessemer, $21.50; Hamilton, No. 1, $18; Norton, No. 1, $17.50; Zanesville, No. 1, $18.

Bar iron trade is at present good in a small way. Mill agents say that inquiry is not as large as it was. Manufacturers are waiting for something to turn up for them advantageously, $1.65@$1.70 is quoted for half extras at mill; local mills are asking $1.85@$1.90 half extras, and $1.80 for car iron. It is believed that a buying movement is in sight all along the line, and prospects are good.

Black Sheet Iron.—Inquiry is improving; we quote for No. 27, $2.95@$3 at mills.

Old Wheels and Rails.—A dull market and weakening prices are reported in this branch of the iron trade: Old wheels range from $19@$19.50; old iron rails, $23.50@$24.25; old steel rails, $19.50@$20.

Nails.—Prices have not recovered from the unsettled condition reported last week; quotations from $2.15 f. o. b. mills Chicago to $2.25@$2.35 at stores.

Plates, Tubes, etc.—Business continues fair and prices remain firm and unchanged. We quote $2.70 for tank iron, $2.90 for tank steel; heavy sheets, Nos. 10 to 14, $2.90@$3; sheet steel, 10 to 14, $3.25@$3.50; shell iron, $3@$3.25; flange iron, $4@$4 25; flange steel, $3.50; shell steel, $3.25; boiler rivets, $4@$4.25; fire-box iron and steel, $4.75@$5.50; boiler tubes 4½ in. and large, 52½ per cent.; 2 to 4 in., 50 per cent. a d 1¾ in. and smaller, 45 per cent.

Structural Iron.—From architectural sources and for bridge work an immense demand is anticipated. An inquiry in connection with the vast buildings that will be required for the Columbian Exposition is expected at an early day. A good supply of orders is reported in hand. For car lots f. o. b. Chicago we quote: Angles, $2.40@$2.50; iron and steel universal plates, $2.65; sheared plates, $2.70; tees, $2.90@$3; beams and channels, $3.20.

Merchant Steel.—Unchanged prices consequent upon good demand are maintained. We quote as follows: $7.75@$8; specials, $12@$25; open hearth machinery, $3; Bessemer machinery, $2.50@$2.60; open hearth spring steel, $2.60@$2.65; tire, $2.50@$2.60; toe calk, $2.70@$2.80; crucible sheet steel, $7@$10; crucible spring, $3.75.

Sheet or Bolt Copper, 22c. pound rates.

Sheet Brass, Copper and Brass Wire, 30 per cent. discount, factory delivery.

Philadelphia. April 11.

(From our Special Correspondent.)

Pig Iron.—Business in crude and finished iron has not improved during the past week to the extent anticipated. To-day's sales and inquiries are calculated to stimulate hope in an early improvement in demand, but there is a feeling of uncertainty in trade circles. Weak prices are affecting production temporarily. Some few makers who need cash have been taking what they could get, but strong companies have put their feet down, and will not sell at even as low prices as were named in several instances two weeks ago. No. 1 is gravitating around $19. No. 2 sold to-day at $17.50. Gray forge rules strong at $16.50@$17, owing to the closing this week of a few large transactions. Southern forge makes very little headway at $16 asked. Bessemer pig is strong at $20, notwithstanding very little business is done. Early spring buyers now regret their precipitate action.

Foreign Material.—Small transactions are taking place in spiegel at $321, and in ferro-manganese at $83.

Billets.—Manufacturers are acting on the presumption that a reaction will soon set in; that is, as soon as large buyers will run out, or nearly run out. Quotations are merely nominal and may be given at $30@$32.

Blooms.—Several small orders for scrap blooms have been booked at $35. Anthracite blooms are $44@$44.50. Work keeps quite regular.

Muck Bars.—The shaking the general market has had for several weeks past has run muck bars down to $28@$28.50 at mill, and buyers are not anxious even at such figures.

Merchant Steel.—A large amount of cheap iron has been sold during the last few days for car building and other like requirements where quality is secondary. Interior mills are capturing considerable business by offering tempting concessions. For refined 1·90@1·95 are paid.

Nails.—Another cut has been made in nails by country makers, who see no other way to keep going. Car lots have gone at $1.85@$1.90, but standards are held at $2 and small lots at $2.15@$2.25.

Sheet Iron.—Galvanized iron orders have been quite numerous of late for summer requirements. Everything is going on as manufacturers coul desire and large orders for light and heavy sheet iron are coming along at full or nearly full card rates.

Skelp Iron.—Buyers think the market is getting in shape for a drop. Prices are nominally 1·85 for grooved, and 2@2·10 for sheared.

Wrought Iron Pipe.—The mills are crowded with work, and quotations seem to be pretty fairly adhered to all around. Much more work is promised for the summer.

Plate and Tank.—While there has been no actual drop in prices, a few good-sized orders have slipped through at what looks like cut rates. Work is abundant 2·10@2·20 for iron tank. Bridge plate, 2·20. Some fair inquiries for steel are arriving.

Structural Material.—Buyers and builders who have a great deal of material to purchase are offering prices that makers in their present oversold condition are in no humor to accept. There are specifications in hand for iron bridge plate at 2·20; angles are 2·20, tees 2·70, and beams and channel iron 3·10.

Steel Rails.—Nothing but uncertainty as to selling prices in the early summer prevents the placing of a good deal of business. One or two brokers report large orders would not be refused at $33.50, but makers say $34 is bottom.

Old Rails.—Old rails are on the toboggan and quotations have touched $23.50@$24.50, according to size of order.

Scrap.—Scrap is lower and duller than for months. Sales have been made at $23 for nearby delivery, but 50@75c. less might be accepted.

Louisville. April 8.

(Special report by HALL BROS. & CO.)

As was expected, local buying has been very limited, though there has been a liberal amount of inquiries from the outside field, which would seem to indicate that some of the buyers had at last come to the conclusion that now is a favorable time to purchase. Very much lower prices have been accepted than were ruling ten days ago, and some offers have been made by prominent furnace companies for deliveries through the year at prices that were as low as the figures that ruled during the summer of 1889, when they reached the lowest on record. Furnace companies complain that there is no margin of profit, and insist that the situation must adjust itself to a reasonable level at an early date, and while every inquiry is promptly met by liberal offerings, there are a few furnaces whose figures are such as exclude them from business, claiming that prices have gone below their possibilities.

Hot Blast Foundry Irons.	
Southern Coke No. 1	$16.00@$16.25.
" " No. 2	15.00@ 15.50.
" " No. 3	14.50@ 15.00.
Mahoning Valley, Lake ore mixture	18.00@ 19.00.
Southern Charcoal No. 1	17.50@ 18.00.
" " No. 2	17.00@ 17.50.
Missouri " No. 1	18.50@ 19.00.
" " No. 2	18.00@ 18.50
Forge Irons.	
Neutral Coke	14.00@ 14.50.
Cold Short	14.00@ 15.00.
Mottled	13.50@ 14.00.
Car Wheel and Malleable Irons.	
Southern (standard brands)	22.50@ 23.00.
" (other brands)	19.00@ 20.00.
Lake Superior	22.50@ 23.00.

Pittsburg. April 10.

(From our Special Correspondent).

Raw Iron and Steel.—We regret to say we have no improvement in values to record. The time for that movement has not yet arrived, although if we are to form an opinion from present indications, we don't think the time is far off; it may be deferred for a while, but not for long. The stock in the hands of consumers is steadily diminishing, and will soon require replenishing; during the past two days the inquiry has been large, many offers were made, provided sellers would shade prices The shading part was declined, for prices are as low for all descriptions as any reasonable person could ask, and what is more, cannot be made from this year's ore and coke at present prices. The stock of last year's ores will soon be exhausted. The same may be said of coke purchased before the late advance of 40 cents per ton. All things taken into consideration, the prospect for cheaper iron is not favorable, and parties that make purchases at present prices will have nothing to regret later on. Sales reported show a wide range in values, the highest prices ruling for Pittsburg furnaces. For other descriptions prices are unsettled and irregular. A few lots have been offered at low figures, others have been rejected.

Dealers as a rule prefer the better grades at higher prices. Sales of low-priced iron leads to rumors of prices lower than the position actually warrants, and on the principle that "one swallow does not make a summer;" neither do a few sales of iron, new to the market and doubtful as to quality, determine the price for standard brands, which are uniform in quality and can always be relied on. The reports from the East show an improved demand and increased firmness, with contracts for large blocks in a fair way for being closed before many days at following rates: Gray Forge, $16.50@$17; No. 1 Foundry, $19@$19.50; No. 2 Foundry, $17.50@$18, with the demand improving.

Freights from South to the East and West have declined 30 cents per ton, to go into effect the 16th. Several furnace men from Mahoning and Shenango Valeys made a visit to the city the first of the week, the result of which has not yet been made known. In regard to production, a leading broker makes the following suggestion: "To close down all the furnaces on Saturday night, and open on Monday morning; this would decrease production and give the men a needed rest."

The situation: Bessemer and Grey Forge not very active; foundry irons neglected; steel slabs and billets about hold their own; muck bar weak; old iron and steel rails have a downward look; ferro-manganese and speigel weaker; bloom ends lower; scrap material neglected.

Coal and Coke Smelted Lake Ore.	
1,000 Tons Bessemer	18.15 cash.
1,000 Tons Bessemer City Furnace	18.50 cash.
1,000 Tons Bessemer	17.85 cash.
1,000 Tons Bessemer	17.75 cash.
750 Tons Gray Forge	16.00 cash.
500 Tons Gray Forge City Furnace	17.00 cash.
500 Tons Bessemer	18.00 cash.
500 Tons Bessemer	17.85 cash.
200 Tons No. 2 Foundry City Furnace	17.50 cash.
100 Tons No. 2 Foundry City Furnace	17.75 cash.
150 Tons Bessemer Low Phos	26.00 cash.
Coke, Native Ore.	
500 Tons No. 2 Foundry	17.00 cash.
300 Tons Mottled	15.75 cash.
250 Tons Mottled	15.50 cash.
100 Tons No. 2 Foundry All Ore	18.00 cash.
50 Tons Silvery	19.00 cash.
50 Tons Silvery Extra	20.00 cash.
50 Tons White and Mottled	15.50 cash.
Charcoal.	
125 Tons No. 3 Cold Blast	29.25 cash.
50 Tons Warm Blast	21 00 cash.
50 Tons White	21.50 cash.
50 Tons Cold Blast	24.00 cash.
Muck Bar.	
750 Tons Neutral April and May	28.25 cash.
500 Tons Neutral	28.00 cash.
350 Tons Neutral, Spot	27.75 cash.
Steel Slabs and Billets.	
800 Tons Billets and Slabs	29.50 cash.
750 Tons Billets	29.25 cash.
500 Tons Billets	28.75 cash.
500 Tons Billets	29.00 cash.
Steel Wire Rods.	
500 Tons American Fives	43.00 cash.
Steel Bloom Ends.	
500 Tons Bloom Ends	23.00 cash.
500 Tons Bloom Ends	23.00 cash.
Ferro-Manganese.	
75 Tons 80 per cent., June Balt	82.05 cash.
50 Tons 80 per cent., Balt	82.50 cash.
Spiegel.	
200 Tons 20 per cent., Pittsburgh	38.50 cash.
Old Iron and Steel Rails.	
500 Tons American Ts	24.00 cash.
300 Tons Old Steel Rails	21.00 cash.

Prices.

Coke or Bituminous Pig—		20% Spiegel at Pittsburg	$38.00@38.50
		Muck-Bar	28.00@
Foundry No. 1	$18.25@18.50	Steel Blooms	28.50@29.00
Foundry No. 2	17.25@17.50	Steel Slabs	29.00@
Gray F. No. 3	16.50@16.75	Steel Cr'p Ends	22.50@23.00
" No. 4	16.00@16.25	Steel Bl. Ends	22.5 @23.00
White	15.75@16.00	Ferro-Man., 80%, seaboard	81.50@83.00
Mottled	15.75@	Steel Billets	29.00@
Silvery	18.25@20.00	Old Iron Rails	24.00@24.50
Bessemer	17.75@	Old Steel Rails	22.50@23.00
Low Phos	26.00@	No. 1 W. Scrap	22.50@23.00
Charcoal Pig—		No. 2 W. Scrap	@18.00
Foundry No. 1	23.50@24.50	Steel Rails	34.00@35.00
Foundry No. 2	22.00@22.75	" light sec	34.00@37.00
Cold-Blast	25.00@29.00	Bar Iron, nom.	1.90@ 1.95
Warm-Blast	24.00@25.00	Iron Nails	2.15@
10 + 12% Spiegel at seaboard	31.00@	Steel Nails	2.15@
		Wire Nails	@ 2.60

CHEMICALS AND MINERALS.

NEW YORK, Friday Evening, April 11.

Heavy Chemicals.—The state of affairs which has prevailed in this market for some weeks past remains unchanged. The great scarcity of supplies here when the Liverpool labor difficulties were at their most unsettled point has been somewhat relieved and some small shipments are coming in. There has been more selling, for consumers had no alternative than to buy or shut down.

For 60 per cent. caustic soda, spot prices, in a round way, are $3.25@$3.35; 70 per cent., $3.05@$3.25, and 74 to 76 per cent., $2.80@$2.90.

Carbonated soda ash, 48 per cent., 2⅛@2½c.; 58 per cent., 2¾@3c.

Caustic Soda Ash.—There is practically none here. Nominal quotations are 2¼@2½c.

Sal soda, spot, is 1⅛@1⅛c.

A dispatch from Pittsburg, Pa., dated the 9th inst., states that at a meeting of the Western Flint Glass Association prices were advanced in the various classes of goods five cents, to meet the heavy advance made in soda ash recently. It was resolved hereafter to refuse orders from jobbers to be filled on demand, as some jobbers have been taking advantage of the manufacturers. Secretary Park says that the trade is now in prosperous condition.

Bleaching Powder.—This article is in a rather unsettled condition, and a wide margin is quoted. There are no shipments coming forward, and the syndicate, to which we have already referred, left the market bare. Quotations range from 2@2½c.

Acids.—The acid bulk business is dull. Indeed,

it is asserted that it is duller to-day than for a long time past. On the other hand, those dealers who trade in a small way state that business is good, and that they are not complaining. There is but little doubt that the amount of business doing is not as great as at the corresponding period last year. The oil refiners have their acid contracted for.

The acid combination is following with increasing velocity the down grade that usually precedes the dissolution of such "combinations in restraint of trade."

We learn on undoubted authority that this combination is not only cutting its schedule prices as against the outside manufacturers, but that some of the members are pushing their business at the expense of their associates in the "combine." The aggressive action of the combination is attracting the attention of the rest of the trade, and it would not be surprising to find these take action necessary to protect their business.

Fertilizing Chemicals.—The usual amount of trade in fertilizers is being transacted, and prices are, possibly, a little firmer. Manufacturers are busy, and they do not want to be bothered with raw materials, consequently the trade in these is somewhat dull. We repeat our last week's prices, since they remain unchanged: high grade dried blood $1.95@$2. For the low grade the price is $1.85@$1.90. Azotine, $1.95@$2. Tankage, high grade, 9 to 10 per cent. ammonia and 15 to 20 per cent. phosphate, $20@$21 per ton, and low grade, 7 to 8 per cent. ammonia and 25 to 30 per cent. phosphate, $18.50. Fish scrap, $21.50@$22 per ton, f.o.b. factory. Sulphate of ammonia at $3.12½@$3.15 per cwt. Concentrated tankage, $1.90@$2.00. Refuse bone-black, guaranteed 70 per cent. phosphate, $18@$19 per ton, and sales at the first figure have been reported. Dissolved bone-black is nominally 95c. per unit for available phosphoric acid, although on large lots prices might be somewhat reduced, and acid phosphate 80c. per unit for available phosphoric acid. Steamed bones, unground, $20@$23; ground, $25@$26.

Charleston rock, undried, $5.75 per ton; kiln-dried, $6.50@$7 per ton, both f. o. b. vessels at the mines. Freights by sail from Charleston to New York, $2.50@$3 per ton. Charleston rock, ground $11.50@$12, ex-vessel at New York.

The market in double manure salts is practically bare. Quotations are for 48 to 50 per cent. sulphate of potash, $1.12½ per 100 pounds for shipments from date; high grade manure salts, basis 90 per cent. sulphate of potash, 2:37½ per 100 pounds. For lots on the spot, an advance over the above named figures of 2½c. per 100 pounds is quoted.

Kainit.—There have been additional sales amounting to 1,000 tons, making in all some 2,500 tons sold in the past two weeks. Prices given on application are for cargoes and remain unchanged. We quote $9.50 for invoice weight and $9.75 for actual weight.

Muriate of Potash.—Quotations in this article are $1.77½@$1.85, according to quantity. There is a light spot supply at present, but 500 tons are expected this week, and arrivals henceforth will be regular. The sales at $2 which have been reported were made by jobbers who trade in a small way.

Brimstone.—There is not much doing in brimstone, which, however, shows up firmer and higher. Quotations are: For best unmixed seconds, $19@$19.25, and for thirds, $18.50@$18.75.

Nitrate of Soda.—The market in nitrate is weak, and ruling quotations are $1.70, ex ship. Sales in a jobbing way, aggregating 3,000 bags, at this price are reported.

Liverpool. April 2.

(From Geo. G. Blackwell's Report.)

Minerals.—Our market has continued to advance all around. Manganese: Arrivals are still slow, and sales are being made at advanced figures. Magnesite: Stocks of raw lump are very large, both at this side and at the port of shipment; prices therefore are in the hands of buyers. Raw ground, £6 10s., and calcined ground, £10@£11. Bauxite (Irish Hill brand): Supplies are scarcely able to compete with the demand; prices, therefore, are very firm—lump, 20.; seconds, 16s.; thirds, 12s.; ground, 35s. Dolomite, 7s. 6d. per ton at the mine. French Chalk: Arrivals this week have somewhat increased, but on account of the strike deliveries have been difficult; prices, therefore, are well maintained, especially for G. G. B. "Angel-White" brand—90s.@95s. medium, 100s.@105s. superfine. Barytes (carbonate) continues easier; selected crystal lump scarce at £6; No. 1 lumps, 90s.; best, 80s.; seconds and good nuts, 70s.; smalls, 50s.; best ground, £6; and selected crystal ground, £8. Sulphate has somewhat improved, especially best brands, on account of the increased demand and short supplies; best lump, 35s. 6d.; good medium, 30s.; medium, 25s. 6d.@27s. 6d.; common, 18s. 6d.@20s.; ground best white, G. G. B. brand, 65s.; common, 45s.; gray, 32s. 6d.@40s. Pumicestone easy; ground at £10, and specially selected lump, finest quality, £13. Iron ore in good demand at full prices. Bilbao and Santander, 9s.@10s. 6d. f. o. b.; Irish, 11s.@12s. 6d.; Cumberland in strong demand at 18s.@24s. Purple ore steady, at last quotations. Spanish manganiferous ore selling freely at full prices. Emery stone: Best brands continue scarce both for spot and forward delivery; prices stronger. No. 1 lump is quoted at £5 10s.@£6, and smalls £5@£5 10s. Fullers' earth steady; 45s.@50s. for best blue and yellow; fine impalpable ground, £7. Scheelite, wolfram, tungstate of soda, and tungsten metal inquired for. Chrome metal, 5s. 6d. per pound. Tungsten alloys, 2s. per pound. Chrome ore: High grades still inquired for at full prices. Antimony ore and metal have further advanced. Uranium oxide, 24s.@26s. Asbestos: Best rock, £17@£18; brown grades, £14@£15. Potter's lead ore: Prices are firm: smalls, £14@£15; selected lump, £16@£17. Calamine: Best qualities scarce—60s.@80s. Strontia steady; sulphate (celestine) steady, 16s. 6d.@17s. Carbonate (native), £15@£16; powdered (manufactured), £11@£12. Limespar: English manufactured, old G. G. B. brand in demand, and brings full prices; 50s. for ground English. Feldspar, 40s. to 50s.; fluorspar, 20s.@£6. Bog ore firm, at 22s.@25s. Plumbago steady; Spanish, £6; best Ceylon lump at last quotations; Italian and Bohemian, £4@£12 per ton; founders, £5@£6; Blackwell's "Mineraline," £10. French sand, in cargoes, continues scarce on spot—20s.@22s. 6d. Ferro-manganese and silicon spiegel in good demand at stronger figures. Chrome iron, 20 per cent., £24@£25. Ground mica, £50. China clay freely offering—common, 18s. 6d; good medium 22s. 6d.@25s.; best 30s.@35s. (at Runcorn). Irish moss, although more is offering, prices are firm at £12@£14.

[Special report by Messrs. J. P. Brunner & Co.]

The "dock laborers' strike" has at length been settled, but work is still progressing very slowly at the docks, and it will be some time before the work settles down on a satisfactory basis, as there is still a certain amount of friction between the Liverpool laborers and the imported hands. With regard to the chemical market there is little business passing, and in several cases values have declined.

Soda ash is strong, as there is little to be had, and nearest values are 1½d. to 1¾d. for both caustic and carbonated, and nothing offering in high-test.

Soda crystals are unchanged at £3 10s. to £3 12s. 6d per ton.

Caustic Soda flat, there being practically no business going on. Makers are very firm in their ideas, in the expectation of spring orders from the Continent, but resellers show more anxiety to realize, and ask for bids. With so little business passing it is difficult to test values, but nominally quotations range as follows: 60 per cent., £9 15s. to £10; 70 per cent., £10 10s. to £11, while the lower figure could probably be shaded in some cases, if bid outright; 74 per cent., £11 10s. to £12; 76 per cent., £13.

Bleaching powder dull at £6. Some sales are reported for America at this figure, but orders are scarce.

Chlorate of potash dull and rather easier at 5d. to 5¼d. per lb. for prompt delivery.

Bicarb. soda firm at £6 5s. per ton and upward for one cwt. kegs, according to brand and quantity, with usual allowances for larger packages.

Sulphate of ammonia flat at £11 10s. to £11 12s. 6d. per ton for good grey 24 per cent. f. o. b. Liverpool.

BUILDING MATERIAL MARKET.

NEW YORK, Friday Evening, April 11.

Bricks.—There is a firm market for good bricks and a good supply. Brickmaking commences in about two weeks, and a few yards have already begun operations. It seems to be the general impression that all indications point to a prosperous year in this branch of building materials. There are, of course, some who assume pessimistic views of the future. Prices have not materially changed since our last report. We quote this week, Haverstraws, $7@$7.75; Uprivers, $6.75@$7; Keyports, $5@$5.35; Southrivers, $6@$7, and Pales, $3.50@$3.75.

Lime.—The general features of the lime market continue pretty much unchanged. The only topic of importance discussed among the lime men is the proposed tariff on lime, the Canada dealers claiming that the Republican party dare not pass the bill, while the Maine Lime "Trust" states that unless all foreign competition is shut out the lime industry will suffer. The trust is making handsome profits now and should not be too greedy.

Reference to the subject will be found in our notes of the week.

Prices remain unchanged, and quotations are: For Rockland common, $1 per barrel; Rockland finishing, $1.20; St. John common and finishing, 90c@95c.; Glen Falls, common and finishing, 85c.@$1.11.

Cement.—The same demand for good brands continues as last reported. Prices for the imported and domestic varieties are as follows: Rosendale, per barrel, 85c.@$1.10; Portland, American, per barrel, $2.15@$2.45; Portland, foreign, per barrel, $2.30@$2.40; Portland, foreign, special brands, $2.45@2.75; Roman, per barrel, $2.65@$2.85; Keene's coarse, per barrel, $4.50@$5.50; Keene's fine, per barrel, $7@$8.25.

NOTES OF THE WEEK.

Nine hours without reduction in wages has been granted 2,200 workmen employed in 12 of the marble factories of Boston, Mass. There remain but three firms that have not yet complied with the request of the marble cutters' union.

IMPORTS AND EXPORTS OF METALS AT NEW YORK MARCH 29 TO APRIL 5 AND FROM JANUARY 1.

IMPORTS.

	Week.	Year.
Spelter.	Tons.	Tons.
Amer. Metal Co		123
La Marche's Sons, H.		5
Meyer, G. A. & E.		9
Muller, Schall & Co.		93
Total		230
Corres. date, 1889		100
Pig Lead.	Lbs.	Lbs.
Caswell, E. A		111
Hendricks Bros		50
Schultz & Co., A		98
Total		259
Corres. date, 1889		54
Tin.	Tons.	Tons.
Abbot, Jere, & Co.		50
Amer. Metal Co		615
Bidwell & French		145
Bruce & Cook		10
Crooks & Co., R		35
Davol & Son		15
Hendricks Bros		26
Lehmaier, S., & Co.		30
Muller, Schall & Co.		300
Naylor & Co		475
Nissen, Geo		10
Phelps, Dodge & Co		650
Thomson, A. A. & Co		20
Thomson, D. & Co.		10
Townsend, & Co., J. R.		30
Trotter & Co, N		50
Total		2,416
Corres. date, 1889		2,440
Tin Plates.	Boxes.	Boxes.
Bruce & Cook	218	15,492
Byrne & Son		1,000
Central Stamp, Co.	2,834	26,337
Coddington & Co	755	24,118
Cohn & Co	1,188	5,755
Con. Fruit Jar Co		120
Corbiere F. & Co		2,333
Cort & Co	7,558	44,620
Crooks & Co	1,711	9,584
De Milt & Co, H. R.	75	385
Dickerson, V. D. & Co	6,428	112,231
Haberman, F.		66
Herring, Chas. E.		1,000
Iron Clad Mfg. Co		318
Lalance & G. M. Co.	472	2,721
Lehmaier, Schw'z & Co		200
Merchant & Co		6,143
Mersick & Co		2,173
Morewood & Co	750	27,563
Newell Bros.		257
Pratt Mfg. Co	2,753	41,250
Phelps, Dodge & Co	15,587	145,203
Shepard & Co		1,219
Taylor, N. & G.		234
Thomson & Co., A. A.	8,024	19,413
Warren, J. M		1,618
Wheeler & Co	1,930	6,318
Whittemore & Co.	2,194	5,626
Wolff & Reesing		625
Wright, Peter & Co.		227
Total	52,477	553,054
Corres. date, 1889		644,941
Pig Iron.	Tons.	Tons.
Abbott & Co, Jere.	100	100
Crocker Bros	100	300
Irvin, R. L. & Co		100
Stetsson & Co., G. W.	50	300
Williamson, J. & Co.	100	300
Total	350	1,250
Corres. date, 1889		7,670

Steel Blooms, Billets, and Slabs.	Tons.	Tons.
Dana & Co		502
Downing, R. F. & Co.		5
Holt & Co., H. N.		10
Martin & Co		80
Milne, A., & Co.		16
Pope, Jas. E., Jr.		61
Roebling's Sons, J. A.		316
Wolff, & Co., R. H.		60
Total		1,040
Corres. date, 1889		9,924
Bar Iron.	Tons.	Tons.
Abbott & Co., Jere.		459
Bacon & Co		536
Crocker Bros		77
Downing & Co		174
E. J. Jacobus		1
Fuller, Dana & Fitz		11
Holt, H. N		10
Lilienberg, N.		285
Milne & Co		234
Muller, Schall & Co.		200
Page, Newell & Co	49	736
Wilson, J. G		2
Total	49	2,545
Corres. date, 1889		1,815
Scrap Iron.	Tons.	Tons.
Samper & Co., S.		186
Stevens, Corvin & Co	30	30
Ward, J. E. & Co.	177	192
Total	207	408
Corres. date, 1889		1,103
Steel and Iron Rods.	Tons.	Tons.
Abbott & Co	251	3,268
American S. Co	70	465
Bacon & Co		73
Carey & Moen		168
Cooper, Hewitt & Co		371
Dana & Co	235	235
Downing & Co		44
Galpin, S. A		901
Greely & Co. C. S.		30
Hazard Mfg. Co	30	74
Jacobus, E. Y		2
Lee, James & Co	86	330
Lundberg, G		110
Milne & Co		180
Muller, Schall & Co.		270
Naylor & Co	40	2,123
Page, Newall & Co.	50	451
Roebling's Sons, J. A.	10	922
Schulze, P. R		1
Temple & Lockwood		6
Wood & Niebuhr		25
Wolf & Co., R. H.		1,770
Total	772	10,518
Corres. date, 1889		16,235
Old Rails.	Tons.	Tons.
Frankfort, M.	341	2,987
Henderson Bros		300
Hernsheim, E		350
Sawyer, Wallace & Co		610
Total	341	4,247
Corres. date, 1889		7,716
Spiegeleisen.	Tons.	Tons.
Abbott, Jere & Co.		2,725
Blakely & McLellan		1,554
Crocker Bros	122	5,125
Dana & Co	280	6,046
Foley, F		50
Geisenheimer & Co.		227
Hernshime, L.	395	6,451
Naylor & Co.	430	4,753
Perkins, C. L.		1,400
Sachs & Richmond.		2
Whittemore, H. & Co.		23
Total	1,227	26,656
Corres. date, 1889		24,261
Iron Ore.	Tons.	Tons.
Baiz, Jacob		67
Bowring & A		222
Earnshaw, A		2,250
Ennis, Andrew		438
Flores & Co., R. de		1,223
Total		13,200
Corres. date, 1889		4,777

EXPORTS.

Copper.	Pounds.	Pounds.
Abbott & Co., Jere.		787,443
Amer. Met. Co., Lt.	7,500	741,525
Belmont, Aug. & Co.		957,315
Burgass & Co		112,339
Funch, Edye & Co	125,374	135,374
Heidelbech, Sichelheimer & Co		672,608
Seamen, S. H.		66,950
Ward, J. E. & Co.		100,000
Wilms & Thune		112,004
Total	142,874	3,703,558
Corre. date, 1889		
Copper Matte.		
American Metal Co	1,421,445	
Lewisohn Bros.	242,881	1,156,168
Nichols, Geo. H		267,202
Paulsen, Wm	1,039,428	
Wilms & Thune	436,789	2,848,706
Total	468,125	6,047,279
Corres date 1889		

DIVIDEND-PAYING MINES.

	NAME AND LOCATION OF COMPANY.		CAPITAL STOCK.	SHARES. No.	SHARES. Par	ASSESSMENTS. Total levied	ASSESSMENTS. Date and amount of last		DIVIDENDS. Total paid.	DIVIDENDS. Date and amount of last		
1	Adams S. L.	Colo.	$1,500,000	150,000	$10	*	....	....	$555 000	Jan.	1887	.10
2	Alice, S. C.	Mont	10,000,000	400,000	25	*	....	....	800,000	Dec.	1889	06¼
3	Alma&Nel Wood C.	Idah	300,000	30,000	10	*	....	....	60,000	Jan.	1889	.50
4	American & Nettie, C.	Colo	.....	300,000	....	....	....	....	150,000	Nov.	1889	.10
5	Amy & Silversmith, S.	Mon.	.....	341,419	....	....	....	....	247,530	Aug.	1887	12½
6	Atlantic, C.	Mich	1,000,000	40,000	25	$280,000	Apl.	1875	$1.00	620,000	Feb	1890	1.50
7	Argenta, S.	Nev..	10,000,000	100,000	100	33b,000	July	1889	.10	40,000	Feb	1880	.20
8	Aspen Mg. & S., S. L.	Colo.	2,000,000	200,000	10	*	....	....	....	400,000	Apl.	1890	.10
9	Aurora, I.	Mich	2,000,000	100,000	20	*	....	....	....	155,000	Oct.	1887	1.87½
10	Badger, S.	Cal.	250,000	50,000	5	*	....	....	....	37,500	Mar.	1890	.25
11	Bassick, G. S.	Colo.	10,000,000	100,000	100	*	....	....	....	400,000	Mar.	1884	1.00
12	Belle Isle, S.	Nev..	10,000,000	100,000	100	*	....	....	....	300,00.	Dec	1879	25
13	Belcher, G. S.	Nev..	10,400,000	104,000	100	*	....	....	....	15,397,000	Apl.	1876	1.00
14	Bellevue Idaho. S. L.	Idah.	1,250,000	125,000	10	120,000	Dec.	1889	.25	2 0.0.00	Jan.	1887	10
15	Bodie Con.. G. S.	Cal .	10,000 000	100 000	100	575,000	Nov	1889	2	1 602,572	Apl.	1885	.50
16	Boston & Mont, G.	Mon	2,500,000	250,000	10	*	....	....	....	520,000	Jun.	1886	.15
17	Boston & Mont., G.S.	Mon'	2,500,000	100,000	25	*	....	....	....	1,300,000	Mar	1890	1.00
18	Breece, S.	Colo	5,000,000	200,000	25	*	....	....	....	2,000	Feb.	1880	.01
19	Brooklyn Lead, L. S.	Utah	500,000	50,000	10	....	....	....	....	127,000	July	1887	.05
20	Bulwer, G.	Cal.	10,000,000	100,000	10	130,000	Aug.	1889	.25	175 000	Jan.	1884	.10
21	Bunker Hill & Sull.	Idah.	3,000,000	300,000	10	*	....	....	....	150.000	Oct.	1883	.06⅔
22	Caledonia, G.	Dak.	10,000,000	100,000	100	505,000	May	1885	.15	144.000	Apl	1889	.08
23	Calliope, S.	Colo.	1,000,000	5	1	....	....	....	....	90,000	Apl.	1890	.01
24	Calumet & Hecla, G.	Mich	2,500,000	100,000	25	1,200,000	....	....	....	34,300,000	May	1890	5.00
25	Carbonnate Hill S. L.	Colo.	1,500,000	200,000	10	*	....	....	....	80,000	Apl.	1884	.05
26	Carlisle, G.	N. M.	1,000,000	200,000	5	....	....	....	....	175,000	Dec.	1888	12½
27	Castle Creek, G.	Idah.	100,000	100,000	1	....	....	....	....	51,000	Oct.	1883	.03
28	Catalpa, S. L.	Colo.	3,000,000	300,000	10	*	....	....	....	270,000	May.	1884	.10
29	Central, C.	Mich	500,000	20,000	25	100,000	Sept	1861	.06	1,950.000	Feb.	1890	1.00
30	Chrysolite, S. L.	Colo.	10,000,000	200,000	50	*	....	....	....	1,656,000	Dec	1884	.25
31	Colorado Central, S. L.	Colo.	2,750,000	275,000	10	*	....	....	....	406,250	Aug	1889	.05
32	Confidence, S. L.	Nev..	.....	24,860	....	306,160	Mar	1890	.75	199,680	Apl.	1889	1.00
33	Cons. Cal. & Va., G. S.	Nev.	21 600 000	216.000	100	108,000	Jan.	1885	.20	3,412,800	Feb.	1890	.50
34	Contention, S.	Ariz.	12,500,000	250.000	50	....	....	....	....	2,587,500	Dec.	1884	.25
35	**Cop. Queen Cons, C.	Ariz.	1,400 000	140,000	10	....	....	....	....	210,000	Feb.	1889	.50
36	Crescent, S. L. G.	Utah	15,000,000	150,000	25	....	....	....	....	228,000	Oct.	1888	.03
37	Crown Point, G. S.	Nev..	10 000.000	100.000	100	2,880,000	Sept	1889	.50	11,580,000	Jan.	1875	2.00
38	Daly, S. L.	Utah	3,000,000	150,000	20	....	....	....	....	1,425,000	Mar	1890	.25
39	Deer Creek, S. G.	Idah.	1 000,000	200,000	5	*	....	....	....	20,000	Jun.	1889	.05
40	Deadwood-Terra, G.	Dak..	5,000,000	200,000	25	*	....	....	....	11,000,000	Nov.	1887	.10
41	Derbec B. Grav., G. S.	Cal..	10,000,000	100,000	100	90,000	Dec.	1881	.10	210.000	Oct	1889	.10
42	Dunkin, S. L.	Colo.	5,000,000	200,000	25	*	....	....	....	390,000	Oct.	1889	.05
43	Dunstone, G. S.	Mont	1,,000,000	200,000	5	*	....	....	....	6,000	Nov.	1888	.03
44	Eclipse.	Colo.	100,000	100,000	1	*	....	....	....	20,000	Nov.	1887	.10
45	Elknorn, G. S.	Mont	1,000,000	100,000	10	50,000	July	1883	.50	850,000	July	1887	.05
46	Empire Lt., G.	Mont	500,000	100,000	5	*	....	....	....	70.500	Oct.	1887	.37½
47	Eureka Con., G. S. L.	Nev..	5,000,000	50,000	100	650,000	Jun.	1889	.50	4,955.000	July	1888	.25
48	Evening Star, S. L.	Colo.	500,000	50,000	10	*	....	....	....	1,45 .000	Dec.	1889	.25
49	Excelsior, G.	Cal..	10,000,000	100,000	100	500,000	Sept	1885	1.00	875,000	Oct..	1889	.25
50	Father de Smet, G.	Dak.	10,000,000	100 000	100	200,000	Nov	1878	1.00	1,125,000	Dec.	1885	.20
51	Franklin, C.	Mich	1,000,000	40,000	25	220,000	Jun.	1871	....	930,000	Jan.	1889	2.00
52	Freeland, G. S. C.	Colo.	5,000,000	200,000	25	*	....	....	....	190,000	July	1886	.10
53	Garfield Lt., G. S.	Nev.	500,000	100.000	5	....	....	....	....	95,000	Apl.	1888	12½
54	Gould & Curry, G. S.	Nev..	10,300,000	103,000	100	4,434,600	Oct.	1889	.30	26,800,000	Oct.	1870	10.00
55	Grand Prize, S.	Nev..	10,000,000	100,000	100	715,000	Nov.	1889	.30	525,000	Jan	1890	.30
56	Granite, S. L.	Idah.	500,000	50,000	1	*	....	....	....	28 4 .00	Feb.	1889	.02
57	Granite Mountain, S.	Mont	10,000,000	400,000	25	....	....	....	....	8 400,000	Mar.	1890	.50
58	Green Mountain, G.	Cal..	1,250,000	125,000	10	....	....	....	....	212.000	Nov.	1881	.07½
59	Hale & Norcross, G. S	Nev.	11,200,000	112.000	100	5,086,000	July	1887	.50	1,162.000	July	1888	.50
60	Hecla Con., S. G. L. C.	Mont	1,500,000	30,000	50	*	....	....	....	1,500.000	Apl	1889	.50
61	Hel'a Mg & Red, S. & L.	Mont	3,315,000	663,000	5	*	....	....	....	197,97.	July	1886	.06
62	Holmes, S.	Nev.	10,000,000	100,000	100	325,000	Mar.	1890	.25	75,000	Apl.	1886	.25
63	Holyoke, G.	Utah	200,000	200,000	1	*	....	....	....	27.000	Feb	1883	.10
64	Homestake, G.	Dak..	12,500,000	125,000	100	200,000	July	1878	1.00	4,518,750	Mar.	1890	.10
65	Honorine, S. L.	Utah	500,000	250,000	2	37,500	Apl.	1889	.05	125.000	Sept	1887	.05
66	Hope, S.	Mont	1,000,000	100,000	10	*	....	....	....	233,252	Apl.	1888	.25
67	Horn-Silver, S. L.	Utah	10.000.000	400.000	25	*	....	....	....	4,100,000	Mar.	1890	.12½
68	Hubert, G.	Colo.	1,000,000	1 mil'n	1	*	....	....	....	247.000	D.c.	1889	.00½
69	Idaho, G.	Cal..	310,000	50,000	100	....	....	....	....	5,235,900	Dec.	1889	5.00
70	Ideal, S. L.	Colo.	1,500,000	50,000	10	*	....	....	....	15,000	Oct.	1886	.05
71	Illinois, S.	N. M.	100,000	100,000	1	....	....	....	....	45,000	Apl	1889	.20
72	Independence, S.	Nev..	10,000,000	100,000	100	340,000	Oct.	1885	.20	225.000	Sept	1879	.25
73	Iron Hill, S.	Dak.	2,500,000	250,000	10	134,000	July	1889	.03	156,250	Nov	1887	.07½
74	Iron-Silver, S. L.	Colo.	10,000,000	500,000	20	*	....	....	....	2,500.000	Apl.	1889	.20
75	Jackson, S.	Nev.	5,000,000	50,000	100	287,500	Nov	1880	.20	55,000	Jun	1889	.10
76	Jay Gould,	Mont	2,000,000	40,000	5	*	....	....	....	395,000	Apl.	1889	.04
77	Jocusitta,	Mex.	2,500,000	250,000	10	....	....	....	....	1,200,000	Feb.	1885	.50
78	Jumbo, G.	Colo.	2,000,000	200,000	10	*	....	....	....	35.000	Oct.	1887	.02½
79	Kearsarge, C.	Mich	1,250,000	50,000	25	190,000	Oct.	1887	1.00	10 .000	Jan	1890	2.00
80	Kentuck.	Nev.	3,000,000	30,000	100	369,000	Dec.	1889	.30	1,350,000	Dec.	1886	.16
81	La Plata, S. L.	Colo.	2,000,000	200,000	10	*	....	....	....	610,000	Sept	1882	.30
82	Leadville Cons., S. L.	Colo.	4,000,000	400,000	10	*	....	....	....	423,000	Apl.	1889	.05
83	Lexington, G. S.	Mont	4,000,000	40,000	100	*	....	....	....	609,000	Jan.	1885	2.00
84	Little Chief, S. L.	Colo.	10,000,00	200,000	50	*	....	....	....	810,000	Jan.	1890	.05
85	Little Pittsburg, S. L.	Colo.	20,000,000	200,000	100	*	....	....	....	1,050,000	Mch.	1889	.50
86	Martin White, S.	Nev..	10,000,000	100,000	100	100,000	Feb.	1890	.25	140.000	Dec.	1886	.25
87	Mary Murphy, G. S.	Colo.	350,000	3,500	100	*	....	....	....	175,000	May	1888	5.00
88	Matchless, S.	Nev.	500,000	500,000	1	*	....	....	....	15,000	Feb.	1890	.00½
89	Minnesota, C.	Mich	1,000,000	40,000	25	420,000	Apl.	1886	1 00	1,820,000	Mar.	1876	....
90	Mono, G.	Cal.	5,000,000	50,000	100	102,850	Nov.	1889	.25	12,500	Mar.	1886	.25
91	Montana, Lt., G. S.	Mont	3,300,000	660,000	5	*	....	....	....	2,465,129	Apl.	1890	.06
92	Morning Star, S. L.	Colo.	1,000,000	100,000	10	*	....	....	....	8.0,000	Dec.	1889	.20
93	Moulton, S.	Mont	2,000,000	400,000	5	*	....	....	....	380,000	Dec.	1887	.07½
94	Mount Pleasant, G.	Cal.	150,000	150,000	1	*	....	....	....	150,000	Feb.	1887	.30
95	Mt. Diablo, S.	Nev.	5,000,000	100,000	100	137,500	Jun.	1880	2.00	360,000	Oct	1889	.20
96	Napa, Q.	Cal..	700,000	100,000	7	*	....	....	....	36.,000	Apl.	1890	.10
97	Navajo, G. S.	Nev..	10,000,000	100,000	100	485,000	Apl.	1888	.30	365,000	Apl.	1889	.10
98	New Guston, S.	Colo.	500,000	100,000	5	*	....	....	....	287,500	Dec	1889	.87½
99	N. Hoover Hill, G. S.	N. C.	300,000	120,000	2½	*	....	....	....	30,000	Dec.	1885	.00½
100	Northern Belle, S.	Nev..	5,000,000	50,000	100	425,000	Jan.	1884	8.30	2,400,000	Apl.	1883	.50
101	North Belle Isle, S.	Nev..	10,000,000	100,000	100	400,000	Sept	1889	.20	230,000	May	1888	.50
102	North Star, G.	Cal..	1,000,000	100,000	10	....	....	....	....	290,000	Dec.	1889	.50
103	Ontario, S. L.	Utah	16,000,000	150,000	100	....	....	....	....	10,850.0.0	Mar.	1890	.50
104	Opnir, G. S.	Nev..	10,000,000	100,000	100	4,159,440	May	1889	.50	1,.95,800	July	1882	1.00
105	Original, S. C.	Mont	1,500,000	60,000	25	*	....	....	....	123,000	July	1888	.05
106	Osceola, C.	Mich	1,250,000	50,000	25	480,000	Apl.	1876	1.60	1,272,500	Mar.	1890	1 00
107	Oxford, G.	N. S.	125,000	125,000	1	*	....	....	....	75,500	Sept	1888	.02
108	Paradise Valley, G. S.	Nev	10,000,000	100,000	100	57,000	Apl.	1888	.15	1,.60,267	July	1882	.40
109	Parrot, C.	Mont	1,800,000	180,000	10	....	....	....	....	5,2,000	Mar	1890	.10
110	Peacock, S. & C.	N.M.	2,000,000	200,000	10	*	....	....	....	60.000	Nov.	1886	....
111	Plumas Eureka, G.	Cal..	1,406,250	140,625	10	....	....	....	....	2,548,046	Oct.	1889	.37½
112	Plutus, G. S. C. L.	Colo.	2,000,000	200,000	10	*	....	....	....	20.000	Feb.	1886	.10
113	Plymouth Con., G.	Cal..	5,000,000	100,000	50	*	....	....	....	2.280.000	Feb	1888	.40
114	Quicksilver, pref., Q.	Cal..	4,300,000	43,000	100	*	....	....	....	1,641,.24	May	1890	1.50
115	" com., Q.	Cal..	5,700,000	57,000	100	....	....	....	....	1,.43,267	July	1882	.40
116	Quincy, C.	Mich	1,000,000	40,000	25	200,000	Dec.	1862	....	5,370,000	Jan	1890	3.00
117	Republic, C.	Mich.	5,000,000	100,000	50	400,000	Dec.	1889	.30	4,312,587	Jun	1887	1.25
118	Richmond, S. L.	Nev..	1,350,000	54,000	25	*	....	....	....	99,785	Feb.	1890	.50
119	Ridge, C.	Mich.	500,000	20,000	25	219,989	Mar	1886	.50	585,000	Mar.	1888	.05
120	Robinson Con., S. L.	Colo.	10,000,000	200,000	50	*	....	....	....	100,000	Dec.	1882	.50
121	Robert E. Lee, S. L.	Colo.	10,000,000	200,000	50	*	....	....	....	4,400,000	July	1889	3.00
122	Savage, S.	Nev..	11,200,000	112,000	100	6,542,000	July	1889	.50	7,500	Apl.	1883	.01
123	Shoshone, G.	Idah.	150,000	150,000	....	*	....	....	....	1,588,145	Apl.	1888	.12½
124	Sierra Buttes, G.	Cal..	2,225 000	122,500	10	*	....	....	....	102,000	Jan.	1871	1.00
125	Sierra Nevada, G. S.	Nev..	10,000,000	100,000	100	6,250,000	Oct.	1889	.50	270.000	Apl.	1849	.10
12	Sierra Nevada, S. L.	Idaho	1,000,000	1	1	*	....	....	....	40,000	May	1889	.02
127	Silver Cord, G. S. L.	Colo.	4,500,000	450,000	10	*	....	....	....	270,000	Apl.	1889	.10
128	Silver King, S.	Ariz.	10,000,000	100,000	100	50,000	Jan.	1890	.30	1,9 0.000	July	1887	.25
129	Silver Mg. of L. V.	N. M.	500,000	500,000	1	*	....	....	....	75,000	Feb.	1890	.05
130	Silverton, G. S. L.	Colo.	2,000,000	200,000	10	*	....	....	....	50.000	Jan	1881	.25
131	Small Hopes Cons., S.	Colo.	5,000,000	250,000	20	*	....	....	....	3,137,500	Jun	1889	.10
132	Spring Valley, G.	Cal..	200,000	200,000	1	50,000	Oct.	1888	.25	3,595,000	Jun.	1888	.05
133	Standard, G. S.	Cal..	10 000,000	100,000	100	50,000	Feb.	1890	.25	155,000	Nov.	1891	.05
134	Stormont, S.	Utah	500,000	1,000	1	*	....	....	....	844.00	Dec.	1887	.20
135	St. Joseph, L.	Mo.	1,500,000	150,000	10	*	....	....	....	9,000	Apl.	1888	.02½
136	Swansea, G.	Colo.	600,000	60,000	10	*	....	....	....	100,000	Nov	1881	.20
137	Tamarack, C.	Mich.	1,000,000	40,000	25	520,000	Apl.	1885	3.00	1,44 .000	Apl.	1882	10
138	Tip Top, S.	Ariz.	10,000,000	100,000	100	250,000	Sept	1883	.25	1,250,000	Apl.	1890	3.00
139	Tombstone, G. S. L.	Ariz.	12,500,000	500,000	25	*	....	....	....	97,500	Feb.	1884	.20
140	United Verde, C.	Ariz.	3,000,000	300,000	10	*	....	....	....	37,500	Apl	1888	2.50
141	Valencia, M.	N. M.	150,000	1,500	100	*	....	....	....	272,500	Oct.	1888	.37½
142	Viola Lt., S. L.	Idah.	750,000	150,000	5	*	....	....	....	1,275,000	July	1887	.10
143	Ward Cons., S. L.	Colo.	2,000,000	200,000	10	....	....	....	....	2),000	Dec.	1889	.05
144	Yankee Girl	Colo.	2,500,000	250,000	10	....	....	....	....	2,184,000	Aug	1871	1.50
145	Yellow Jacket, G. S.	Nev..	12,000,000	120,000	100	5,500.000	Mar	1889	.50	3,300	Jun	1889	.10
147	Webb City, L.	Mo..	55,000	11,000	5	....	....	....	....	25,000	Oct	1889	.10
148	Woodside	Utah	....	....	....	....	....	....	....	175,000	....	1889	25
149	Young America	Cal..	....	....	....	....	....	....	....	....	....	1889	.10

NON-DIVIDEND PAYING MINES

	NAME AND LOCATION OF COMPANY.		CAPITAL STOCK.	SHARES. No.	SHARES. Par Value.	ASSESSMENTS. Total levied	ASSESSMENTS. Date & am't of last.		
1	Agassiz Cons., S. L.	Colo.	$2,500,000	50,000	$50	*	....	....	....
2	Alleghany, S.	Colo.	5,000,000	50 ,000	10	....	....	....	....
3	Alloues,	Mich	2,000,000	80,000	25	$737.000	Jan	1890	.50
4	Alpha Con., G. S.	Nev..	3,000,000	30,000	100	5 8,750	July	1888	7½
5	Alta, S.	Nev..	10,080,000	100,800	100	2,248,800	Sept	1888	5
6	Amador, G.	Cal.	400,000	200,000	2	*	....	....	....
7	American Flag, S.	Colo.	1,250,000	125,000	10	800,000	Jun	1877	.10
8	Amity, S.	Colo.	250,000	250,000	1	....	....	....	....
9	Anglo-Montana, Lt.	Mon.	600,000	120,000	5	*	....	....	....
10	Astoria, G.	Cal..	200,000	100,000	2	*	....	....	....
11	Barcelona, S.	Nev..	5,000,000	200,000	25	*	....	....	....
12	Bechtel Con., G.	Cal.	10,000,000	100,000	100	173,500	Jan.	1883	.10
13	Belmont, S.	Nev.	5,000,000	50,000	100	735.000	Apl	1886	.10
14	Best & Belcher, G. S.	Nev.	10,080,000	100,800	100	2,180,590	Jan.	1890	.25
15	Big Pittsburg, S. L.	Colo.	20,000,000	200,000	100	*	....	....	....
16	Bi-Metallic, S.	Colo.	5,000,000	200,000	25	*	....	....	....
17	Black Jack, G.	Cal.	3,000,000	300,000	10	*	....	....	....
18	Boston Con., G.	Cal.	10,000,000	100,000	100	170,000	Nov	1888	.25
19	Bremen, S.	N. M	5,000,000	500,000	10	*	....	....	....
20	Brownlow, S.	Colo.	250,000	250,000	1	....	....	....	....
21	Brunswick, G.	Cal..	2,000 000	400,000	5	*	....	....	....
22	Bullion, G. S.	Nev..	10.000.000	100,000	100	4,007,000	Aug.	1888	.50
23	Calaveras, G.	Cal..	500,000	500,000	1	*	....	....	....
24	Carisa,	Wy	500,000	100,000	5	*	....	....	....
25	Cupano, S. L. C.	Ven.	200,000	100,000	2	*	....	....	....
26	Cashier, G. S.	Colo.	500,000	250,000	2	*	....	....	....
27	Charles Dickens, G. S.	Idah.	1,250,000	250,000	5	*	....	....	....
28	Cherokee, G.	Cal..	1,500,000	150,000	10	....	....	....	....
29	Chollar, S.	Nev..	11,200,000	112,000	100	1,484,000	July	1889	.50
30	Cleveland, T.	Dak.	1,000,000	500,000	2	*	....	....	....
31	Colchis,	N. M.	500,000	50,000	10	....	....	....	....
32	Commonwealth, S.	Nev.	10,000,000	100,000	10	170,000	Nov	1888	.50
33	Comstock, G. S.	Nev..	10,000,000	100,000	100	30 000	Mar.	1887	.15
34	Con. Imperial, G. S.	Nev..	5,000,000	50,000	100	1,802,500	Nov.	1889	.05
35	Con. Pacific, G.	Cal..	6,000 000	60,000	100	192,000	Oct.	1889	.10
36	Cons. Silver, S.	Mo..	2,500,000	250,000	10	*	....	....	....
37	Crescent, S. L.	Colo.	3,000,000	300,000	10	*	....	....	....
38	Crocker, S.	Ariz.	10,000,000	100,000	100	135,000	Jan.	1890	.10
39	Crowell, G.	N. C	500,000	500,000	1	*	....	....	....
40	Dahlonega, G.	Ga..	250,000	250,000	1	*	....	....	....
41	Dandy, S.	Colo.	5,000,000	500,000	10	*	....	....	....
42	Decatur, S.	Colo.	1,500,000	300,000	5	*	....	....	....
43	Denver City, S. L.	Colo.	5,000,000	500,000	10	*	....	....	....
44	Denver Gold, G.	Colo.	300,000	60,000	5	*	....	....	....
45	Durango, G.	Colo.	500,000	500,000	1	*	....	....	....
46	Eastern Dev. Co., Lt.	N. S.	1,500,000	150 000	10	990,000	Mar.	1888	1.00
47	El Cristo, G. S.	U.S.C	1,000,000	500,000	2	*	....	....	....
48	El Dorado, G.	Cal..	1,000,000	250,000	4	*	....	....	....
49	El Valento, G.	U.S.C	1,000,000	500,000	2	*	....	....	....
50	Empire, S.	Utah	1,000,000	100,000	10	....	....	....	....
51	Eureka Tunnel, S. L.	Nev..	10,000,000	100,000	100	*	....	....	....
52	Exchequer.	Nev.	10,000,000	100,000	100	515,000	Apl.	1889	.25
53	Found Treasure, G. S.	Nev..	10,000,000	100,000	100	30,530	Apl	1889	12½
54	Gogebic L. Syn., I.	Wis.	6,000,000	200,000	25	....	....	....	....
55	Gold Cup, S.	Colo.	500,000	500,000	1	*	....	....	....
56	Golden Era, S.	Mon.	2,000,000	200,000	10	*	....	....	....
57	Gold Placer, G.	Colo.	5,000,000	200,000	25	229,314	Dec.	1886	.25
58	Gold Rock, G.	Cal.	1,000,000	500,000	2	*	....	....	....
59	Goodshaw, G.	Cal..	10,000,000	100,000	100	....	....	....	....
60	Grand Belt, C.	Tex	12,000,000	120,000	100	....	....	....	....
61	Grand Duke.	Colo.	800,000	80,000	10	....	....	....	....
62	Great Romance, G.	U.S.C	1,000,000	500,000	2	*	....	....	....
63	Gregory-Bobtail, G.	Colo.	550,000	550,000	1	*	....	....	....
64	Gregory Con., G.	Mon.	3,000,000	300,000	10	....	....	....	....
65	Harlem M. & M. Co., G.	Cal..	1 000,000	200,000	5	....	....	....	....
66	Head Cent. & Tr. S.	Ariz.	10,000,000	100,000	100	....	....	....	....
67	Hector, G.	Cal..	1,500,000	300,000	5	45,000	Jan.	1889	.15
68	Highland, C.	Mich	500,000	25,000	20	....	....	....	....
69	Hollywood, S.	Cal.	200,000	200,000	1	*	....	....	....
70	Hortense, S.	Colo.	2,000,000	200,000	10	....	....	....	....
71	Huron, C.	Mich	1,000,000	40,000	25	380,000	May	1887	3.00
72	Iron Gold & Silver, S.	N. M.	2,000,000	200,000	10	*	....	....	....
73	Ironton, I.	Wis.	1,000,000	40,000	25	....	....	....	....
74	Iroquois, C.	Mich.	1,250,000	50,000	25	....	....	....	....
75	J. D. Cameron, S.	Ariz.	1,000,000	100,000	100	....	....	....	....
76	Julia Cons., G. S.	Nev..	11,000,000	110,000	100	1,660,000	Jan.	1889	.10
77	Lacrosse, G.	Colo.	1,000,000	100,000	10	*	....	....	....
78	Lee Basin, S. L.	Colo.	5,000,000	500,000	10	*	....	....	....
79	Mayflower Gravel,	Cal..	1,000,000	100,000	10	585,000	Mar.	1890	.56
80	May Mazeppa, S.	Colo	500,000	500,000	1	*	....	....	....
81	Medora, G.	Dak.	250,000	250,000	1	*	....	....	....
82	Meeker, S.	Nev..	10,000,000	100,000	100	2,860,760	Dec.	1889	.25
83	Middle Bar G.	Cal.	400,000	200,000	2	*	....	....	....
84	Mike & Starr, S. L.	Colo.	1,000,000	200,000	5	*	....	....	....
85	Mollie Gibson.	Colo.	2,000,000	100,000	2	....	....	....	....
86	Monitor, G.	Colo.	100,000	1,000,000	1	*	....	....	....
87	Mutual Mg. & Sm.	W'sh	100,000	1,000,000	1	*	....	....	....
88	Nautilus, G.	Nev.	1,000,000	40,000	25	....	....	....	....
89	Neath, G.	Colo.	1,000,000	100,000	10	....	....	....	....
90	Nevada Queen, S.	Nev	10,000,000	100,000	100	250,000	Oct.	1889	.25
91	New Germany, G.	N. S.	100,000	100,000	1	*	....	....	....

NEW YORK MINING STOCKS QUOTATIONS.

DIVIDEND-PAYING MINES

NAME AND LOCATION OF COMPANY.	April 5.		April 7.		April 8.		April 9		April 10		†April 11.		SALES.
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Adams, Colo	.60	.....	....	....	.66	....	.80	....	....	....	....	..	1,400
Alice, Mont	....	.....	....	....	....	....	....	....	....	....	....	..	.....
Argenta, Nev	....	....	.14	....	....	....	....	....	....	....	....	....	400
Aspen Mg , Colo	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Belcher	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Belle Isle, Nev	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Bodie Cons., Cal	....	....	....	....	....	....	.60	....	....	....	....	..	200
Bos. & Mont., Mont	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Breece, Colo	....	.....	....	....	....	....	.35	....	....	....	....	....	100
Bulwer, Cal	....	.....	....	....	....	....	....	.....	....	....	....	....	.....
Caledonia, Dak	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Chrysolite, Colo	....	.....	....	....	.14	....	....	....	....	....	....	....	200
Colorado Central	....	....	....	....	....	....	....	....	....	....	....	....	.....
Cons. Cal. & Va., Nev.	....	.....	....	....	....	....	5 00	....	5 3	....	5.25	..	260
Crown Point, Nev	2.30	.....	....	....	....	....	....	....	2 20	....	....	....	150
Deadwood, Dak	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Dunkin, Colo	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Eureka Con	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Father de Smet, Dak	....	.....	....	....	40	....	....	....	....	....	....	....	010
Franklin, Mich	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Freeland, Colo	1.20	1.05	1 15	1.05	1.20	1.05	1.20	....	1.20	1 05	1.05	..	26,200
Gould & Curry, Nev	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Hale & Norcross, Nev	3.00	....	....	....	....	....	....	....	....	....	3.00	....	125
Holyoke, Id	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Homestake, Dak	....	.....	....	....	9 50	....	....	....	....	....	....	....	20
Horn-Silver, Ut	2.40	2.35	2.40	2.35	2.30	2 02	2.35	2.30	2.35	2 25	2.25	....	11,040
Iron Hill, Mich	....	.....	....	....	....	....	....	....	.50	....	....	....	200
Iron Silver, Colo	....	.....	1.95	....	....	....	2.25	....	....	....	....	....	350
Leadville C., Colo	....	.....	....	....	....	....	....	....	....	....	....	....	2,500
Little Chief, Colo	....	.....	30	.28	....	....	....	....	....	....	.23	....	1,100
Little Pittsburg, Colo	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Mono	....	.....	....	....	....	....	.40	....	....	....	....	....	100
Mt. Diablo, Nev	..	.....	..	....	....	....	....	....	....	....	....	....	.....
Navajo, Nev	....	.....	.25	.20	....	....	....	....	....	....	.22	....	1,400
North Belle Isle, Nev	....	.....	....	....	....	....	1.10	....	....	....	....	....	30
North Star, Cal	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Ontario, Ut	....	.....	....	....	....	....	41.50	....	40.50	....	....	....	100
Ophir, Nev	4.25	....	....	....	4.50	....	....	....	....	....	....	....	100
Osceola, Mich	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Plutus, Colo	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Plymouth, Cal	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Quicksilver, Pref	36 50	.....	37 00	....	37 75	37 50	....	....	37.50	....	....	....	600
Com	....	.....	7.00	6 50	7.00	....	7.00	....	7.00	....	....	....	1,100
Robinson Cons. Colo	..	.....	.20	....	....	....	....	....	.40	....	.40	....	500
Savage, Nev	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Sierra Nevada, Nev	....	.....	2.65	....	....	....	2.00	....	....	....	....	..	200
Silver Cord	.42	....	....	....	....	....	....	....	....	....	....	....	1,000
Silver King	.38	.35	....	....	.40	.38	....	....	.51	.50	....	..	3,500
Silver Mg. of L V	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Small Hopes, Colo	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Standard, Cal	.45	.....	.45	.43	....	....	.45	‡.18	.50	‡.18	....	....	1,850
Tamarack	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Yellow Jacket	..	.....	....	....	....	....	....	....	....	....	....	....	.....

NON-DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	April 5.		April 7.		April 8.		April 9.		April 10.		April 11.		SALES.
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Allouez, Mich	....	..	....	....	....	....	....	....	....	....	....	....	.....
Alta, Nev	....	....	....	....	1.45	....	....	....	..	....	....	....	100
Andes, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Amador, Cal	....	....	....	....	....	....	....	....	....	....	....	....	.....
American Flag, Colo	....	....	....	....	....	....	....	....	....	....	....	....	.....
Astoria, Cal	.05	....	.05	..	.05	....	.05	....	....	....	.05	....	9,500
Barcelona, Nev	..	....	....	....	....	....	....	....	....	....	.21	....	100
Bechtel, Cal	....	....	....	....	....	....	....	....	....	....	....	....	.....
Best & Belcher, Nev	3 20	....	....	....	....	....	....	....	....	....	....	....	.....
Brunswick, Cal	.55	.54	.55	.54	.57	.55	.57	.56	.60	.57	.60	....	14,100
Bullion, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Eutte & Bost, Mont	....	....	....	....	....	....	....	....	....	....	....	....	.....
Castle Creek, Id	....	....	....	....	....	....	....	....	....	....	....	....	.....
Cholla, Nev	4.25	.....	....	....	....	....	....	....	....	....	....	....	100
Col. & Beaver, Id	....	....	....	....	....	....	....	....	....	....	....	....	.....
Commonw'th, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Comstock T., Nev	....	....	....	....	....	....	....	....	18	.15	....	....	1,350
" bonds	....	....	30.00	....	....	....	....	....	32 00	30 00	30 00	....	7,000
" scrip	....	....	....	....	....	....	....	....	....	....	....	30.00	100
Con. Imperial, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Del Monte, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
ElCristo, Rep of Col	1.50	....	1 50	1.45	1.45	....	1 45	....	1.50	1 45	1.50	....	2,700
Excelsior, Cal	....	....	....	....	....	....	....	....	....	....	....	....	.....
Exchequer Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Julia, Nev	.40	....	.40	....	....	....	.4	..	.45	....	.45	....	700
Kingst'n & Pemb'ke	....	....	....	....	.60	....	....	....	....	....	....	....	100
Kossuth, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Lacrosse, Colo	.07	....	.07	....	....	....	....	....	....	....	....	....	2,500
Lee Basin, Colo	....	....	....	....	....	....	....	....	....	....	....	....	.....
Mexican, Nev	....	....	3 85	....	....	....	....	....	....	....	....	....	100
Middle Bar, Cal	....	....	....	....	....	....	....	....	....	....	....	....	.....
Moniter	....	....	....	....	....	....	.02	....	....	....	.05	....	1,300
Mutual Sm. & M. Co	1.70	....	1.70	....	1.65	....	1.70	....	1.70	....	1.70	....	1,000
Nevada Queen, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
N. Com'nw'th, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Occidental, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Oriental & Mil., Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Overman, Nev	....	....	....	....	....	....	....	....	1.40	....	....	....	100
Phœnix of Ariz	90	.80	....	....	.87	....	.9	.85	.87	....	.89	....	2,300
Potosi, Nev	4.25	....	....	....	....	....	....	....	5.75	5.63	....	....	280
Rappahann'k, Va	....	....	....	....	....	....	06	....	....	....	05	....	1,900
S. Sebastian, San S	....	....	....	....	....	....	....	....	....	....	....	....	.....
Scorpion, Nev	....	....	....	....	.35	....	.45	..	....	....	....	....	500
Shoshone Idaho	....	....	....	....	....	....	....	....	....	....	....	....	.....
Silver Hill, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Silver Queen	....	....	....	....	....	....	....	....	....	....	....	....	.....
Sutro Tunnel, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
" Trust Cert	....	....	....	....	....	....	....	....	....	....	....	....	.....
Sutter Creek, Cal	1.55	1 50	1.55	1 50	1.55	1.50	1.60	1.55	1.60	1.55	1.55	....	7,900
Tornado, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Union Cons., Nev	....	....	....	....	....	....	....	....	3.40	....	....	....	100
Utah, Nev	.80	....	.85	....	.70	....	....	....	....	....	.80	....	600
Wall St. M. & M. Co	.72	.70	.72	.71	.71	.70	....	....	.67	....	.66	.65	3,900

*Ex dividend. †Dealt in at the New York Stock Ex. Unlisted securities ‡Assessment unpaid. Dividend shares sold, 46,475. Non-dividend shares sold, 58,830 Total, New York, 105,305.

BOSTON MINING STOCK QUOTATIONS.

NAME OF COMPANY.	April 4.*		April 5.		April 7.		April 8		April 9.		April 10.		SALES.
Atlantic, Mich	....	.....	..	.....	....	....	....	..	....	....	14 00	13.88	150
Bodie, Cal	....	.....	....	.....	....	....	.80	....	.75	.65	....	....	1,250
Bonanza Developm't	..	....	48.88	48.63	49.00	48.50	49.00	48.50	49 50	49 00	49 38	49 00	1,615
Bost. & Mont., Mont	....	....	....	....	....	....	....	....	....	....	....	....	.....
Breece, Colo	....	....	....	....	260	....	260	....	260	....	....	....	45
Calumet & Hecla, Mich	....	....	.15	1 3	.15	....	.18	....	.9	....	.25	.23	1,700
Catalpa, Colo	....	....	....	....	....	....	....	....	....	....	....	....	.....
Central, Mich	....	....	....	....	....	....	....	....	....	....	....	....	.....
Chrysolite, Colo	....	....	....	....	....	....	....	....	....	....	....	....	.....
Con. Cal. & Va., Nev	....	....	....	....	....	....	.55	....	.60	.55	....	....	300
Dunkin, Colo	....	....	....	....	....	....	....	....	....	....	....	....	.....
Enterprise	....	....	....	....	....	....	....	....	....	....	....	....	.....
Franklin, Mich	....	....	15.00	....	....	....	....	....	15.13	12 50	....	....	265
Freeland, Col	....	....	....	....	....	....	....	....	....	....	....	....	.....
Honorine, Utah	....	....	....	....	....	....	....	....	....	....	....	....	.....
Little Chief	....	....	....	....	....	....	....	....	....	....	....	....	.....
Little Pittsburg, Colo	....	....	....	....	....	....	....	....	....	....	....	....	.....
Martin White, Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Moulton	....	....	....	....	....	....	....	....	....	....	....	....	.....
Napa, Cal	....	....	....	....	....	....	....	....	....	....	....	....	.....
Ontario, Utah	....	....	....	....	....	....	....	....	....	....	....	....	.....
Osceola, Mich	....	....	28.25	....	27.75	27.25	27.50	27.25	28.50	27.75	28.38	28.13	1,186
Pewabic, Mich	....	....	....	....	....	....	....	....	....	....	....	....	.....
Quincy, Mich	....	....	74.00	73.00	75.75	75.00	76.00	....	....	....	81.00	77.50	208
Ridge, Mich	....	....	....	....	1.00	....	....	....	....	....	....	....	500
Sierra Nev., Nev	....	....	....	....	....	....	....	....	....	....	....	....	.....
Silver King, Ariz	....	....	....	....	....	....	....	....	....	....	....	....	.....
Standard, Cal	....	....	....	....	....	....	....	....	....	....	....	....	.....
Tamarack, Mich	....	....	160	159	....	....	160	159	160	159	160	..	57

NAME OF COMPANY.	April 4.*		April 5.		April 7.		April 8		April 9.		April 10.		SALES.
Allouez, Mich	....	....	....	....	3.00	....	3.00	....	3 00	....	3.25	3.00	775
Arnold, Mich	....	....	....	....	....	....	....	....	....	....	.42	....	00
Astec, Mich	....	....	....	....	.08	....	....	....	....	....	....	....	100
Bowman	....	....	....	....	....	....	....	....	....	....	....	....	.....
Butte & Bost., Mont	....	....	....	....	14 00	....	14.00	....	14.00	....	14.00	....	490
Centennial, Mich	....	....	19.38	19.25	19.25	18.00	18.00	....	23.00	18 00	25.75	22 50	3,650
Claudia J., Colo	....	....	....	....	.10	....	....	....	....	....	....	....	330
Crescent, Colo	....	....	....	....	.09	....	.08	....	....	....	.09	08	650
Dana	....	....	....	....	....	....	....	....	....	....	....	....	.....
Don Enrique, N. M	....	....	....	....	.25	....	.25	....	.30	....	....	....	400
El Cristo, S.	....	....	....	....	....	....	....	....	....	....	....	....	.....
Hanover, Mich	....	....	....	....	....	....	....	....	....	....	....	....	.....
Humboldt, Mich	....	....	....	....	....	....	.10	....	.15	....	....	....	350
Hungarian	....	....	....	....	....	....	....	....	....	....	....	....	.....
Huron, Mich	....	....	....	....	3.13	....	....	....	3 20	....	....	....	150
Kearsarge	....	....	12 88	12 25	12 50	11.88	12.00	11.88	12.50	12.50	12.88	12.38	6,166
Mesnard, Mich	....	....	....	....	....	....	....	....	....	....	....	....	.....
National, Mich	....	....	1.38	....	....	....	1.25	....	....	....	....	....	200
Native, Mich	....	....	....	....	....	....	.07	....	....	....	....	....	200
Phœnix, Ariz	....	....	....	....	.90	....	....	....	.90	....	....	....	450
Pontiac, Mich	....	....	....	....	....	....	....	....	....	....	....	....	.....
Rappahannock, Va	....	....	....	....	....	....	....	....	.06	....	....	....	200
Rockland	....	....	....	....	....	....	....	....	....	....	....	....	.....
Santa Fe, N. Mex	....	....	.65	.60	58	.50	.60	.55	.60	.55	.70	.60	24,360
Security, Colo	....	....	....	....	....	....	....	....	....	....	....	....	.....
Shoshone, Idaho	....	....	....	....	....	....	....	....	....	....	....	....	.....
South Side, Mich	....	....	....	....	.13	....	.14	....	....	....	....	....	200
Star	....	....	....	....	....	....	....	....	....	....	....	....	.....
Washington, Mich	....	....	....	....	.14	....	....	....	15	....	....	....	300

* Good Friday. Boston: Dividend shares sold, 7,276. Non-dividend shares sold, 38,871. Total Boston, 46,147.

COAL STOCKS.

NAME OF COMPANY.	Par val. of sh'rs.	April 5.		April 7.		April 8.		April 9.		April 10.		April 11.		Sales.
		H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
American Coal		....	....	....	....	....	....	....	....	....	....	....	....	.....
Cambria Iron		....	....	....	....	....	....	....	....	....	....	....	....	.....
Cameron Coal & Iron Co		....	....	....	3	....	3	....	....	....	....	....	....	600
Ches. & O. RR	100	....	....	....	....	....	....	....	....	....	....	....	....	.....
Chic. & Ind. Coal RR	100	....	....	....	....	....	....	....	....	....	....	....	....	.....
Do. pref	100	....	....	....	....	....	....	....	....	....	....	....	....	.....
Col. & Hocking Coal	100	....	....	22¾	22½	23	22	22⅛	22	22½	....	22½	21¾	1,800
Col., C. & I	100	46⅜	46	47¼	46	47	46⅜	46⅜	46	46¼	46	47	46	5,360
Consolidation Coal	100	....	....	....	....	24	....	....	....	....	....	....	....	100
Del. & H. C	100	....	....	150	149¾	151¼	150	151¼	151	....	....	151	....	1,502
D., L. & W. RR	50	136⅛	135¾	135⅝	135¼	13. ⅜	135¼	135⅜	135⅛	135¾	135¼	136	135¼	54,910
Hocking Valley	100	....	....	....	....	21¾	21½	21⅜	21¼	21⅞	21½	21¾	21⅜	1,700
Hunt. & Broad Top	....	....	....	....	....	17½	....	18	17½	18	....	....	....	821
Do. pref	....	....	....	43½	....	44⅛	44	44¾	44⅛	44¾	....	....	....	931
Illinois Coal & Coke Co	....	....	....	....	....	....	....	....	....	....	....	....	....	.....
Lehigh C. & N	50	52	....	....	....	52¼	52	52	....	....	....	....	....	70
Lehigh Valley RR	50	51¾	....	52	51⅜	52	51⅞	52	51⅞	52	....	....	....	409
Lehigh & Wilkesb. Coal	100	....	....	....	....	....	....	....	....	....	....	....	....	.....
Mahoning Coal	100	....	....	....	....	....	....	....	....	....	....	....	....	.....
Do. pref	....	....	....	....	....	....	....	....	....	....	....	....	....	.....
Maryland Coal	100	....	....	....	....	14	....	....	....	....	....	....	....	200
Morris & Essex	100	....	....	....	....	....	....	....	....	152	....	....	....	300
New Central Coal	50	....	....	....	....	....	....	....	....	....	....	....	....	.....
N. J. C. R. R	100	....	....	119	....	119	118⅛	118¼	....	....	....	118¼	....	865
N. Y. & S. Coal	100	....	....	....	....	....	....	....	....	....	....	....	....	.....
N. Y., Susq. & Western	100	....	....	7	....	....	....	7	....	7	....	....	....	300
Do. pref	100	28⅛	....	28	....	28	....	28	....	28	....	....	....	550
N. Y. & Perry C. & I	100	....	....	....	....	....	....	....	....	....	....	....	....	.....
Norfolk & Western R.R.	50	....	....	....	....	....	....	....	....	....	....	....	....	.....
Do. pref	50	60⅛	....	....	....	....	....	....	....	....	....	61	....	200
Penn. Coal	50	....	....	....	....	....	....	....	....	....	....	300	....	30
Penn. RR	50	53⅞	....	54	53⅛	54	53⅞	54	53⅛	54¼	54	....	....	2,011
*Ph. & R. RR	....	42	41⅝	41⅝	40	40⅝	40½	41	40⅜	41	40⅝	40⅝	40⅜	78,169
Sunday Creek Coal	....	....	....	....	....	....	....	....	....	....	....	....	....	.....
Do. pref	100	....	....	....	....	....	....	....	....	....	....	....	....	.....
Tennessee C. & I. Co	....	51½	....	50½	49¾	50¼	50	50	....	50	48	49	....	2,325
Do. pref	....	....	....	....	....	....	....	....	....	....	....	....	....	.....
Westmoreland Coal	....	....	....	....	....	....	....	....	....	....	....	....	....	.....

**Sales in New York, 56,620; in Philadelphia, 21,549. Total sales, 103,193.

San Francisco Mining Stock Quotations.

COMPANY	CLOSING QUOTATIONS. April 4.*	April 5.	April 7.	April 8.	April 9.	April 10.
Alpha	....	....	....	....	....	....
Alta	....	1.25	1.20	1.25	1.20	1.30
Belcher	....	....	....	....	....	....
Belle Isle	....	....	.25	....	....	.20
Best & Bel	....	3.35	3.25	3.30	3.55	3.70
Bodie	....	....	....	....	.55	.50
Bulwer	....	....	....	....	....	....
Chollar	....	3.95	4.00	4.50	4.95	4.50
C'm'weal'h	....	2.60	2.65	2.60	2.50	2 50
Con. C. & V	....	....	4.90	5.25	5.25	5.25
Con. Pac	....	....	....	....	....	....
Crown Pt	....	2.25	2.15	2.35	2.65	2.50
Eureka C	....	....	....	3.25	....	....
Gould & C	....	1.90	1.75	1.85	2.00	1.95
Grd. Prize	....	....	....	....	....	....
Hale & N	....	2.95	2.80	2.85	3.15	2 85
M. White	....	....	....	....	....	....
Mexican	....	3.70	3 60	3.75	4.00	3.75
Mono	....	....	....	....	....	.50
Mt. Diablo	....	....	....	....	....	2.90
Navajo	....	....	....	....	.25	....
Nev. Queen	....	.65	....	.60	....	.60
N. Belle I	....	....	....	1.05	1.00	1.00
Occidental	....	....	....	....	....	....
Ophir	....	4.60	4.50	4.50	5 13	4.80
Potosi	....	3 90	4.00	4 50	5.88	6.00
Savage	....	2.25	2.10	2.25	2.30	2.30
Sierra Nev	....	2.60	2.75	2.85	2.90	2.80
Union Con	....	....	2.95	3.15	3.25	3.25
Utah	....	.75	.65	.75	.70	.75
Yellow Jkt	....	....	2.30	2.35	2.70	2 60

*Good Friday.

STOCK MARKET QUOTATIONS.

Baltimore, Md.

COMPANY.	Bid. L. H.	Asked. L. H.
Atlantic Coal	....	1.50
Balt. & N. C.	.08	.13
Big Vein Coal	....	....
Conrad Hill	....	.10
Cons. Coal	.23	.25
Diamond Tunnel	....	.40
George's Crk. C	....	1.10
Lake Chrome	.10	.25
Maryland & Charlotte	....	....
North Star	....	....
Silver Valley	....	....

Prices bid and asked, lowest and highest, during the week ending April 10th.

Birmingham, Ala.

COMPANY.	Bid. L. H.	Asked. L. H.
Ala. R. Mill Co.	$100	$60
*Alice Furnace.	$104½	....
Anna Howe G. Mg. Co	$¾	$⅝
Bessmer Land.	$37½@$38¼	$38½@$ 9
Bir. Mg.& M g.	$85	$103@$105
Cahaba Coal Mg Co	$55	$65
Camille Gold Mg. Co	$⅛	$1⅛
De Bardeleben C. & I. Co.	$73	$81
Decat. L. Imp.	$10¾	$11⅛
Decatur Min. L.	$21	$23
Ensley Land	$8	$10
*Eureka	$100@$115	$121
Florence L. & Mg. Co.	$19@$20	$23
Gadsen Land.	$6½@$7	$7⅛@$7⅜
Hecia Coal Co.	$30	....
Hen. S. & M. Co	$90@$101	....
Mag-Ellen	$100	....
Mary Lee C. & R. Co.	$30	....
Sheffield C. & I. Co.	$67	$71@$71¼
Sloss I. & S.	....	$57
†Sloss I. & S.	$94	$9 ½
††Sloss I. & S.	$77½@$78	....
Tuscaloose C. I. & I. Co	$21	....
Tenn. C. & I. Co.	$48@$53	$49@$54
" pref.	$100	$108
Woodstock I. Co.	$53¾@$54½	$55

Prices, highest and lowest, bid and asked during week ending April 7th.

* Bonds. † First mortgage. †† Second mortgage.

Pittsburg, Pa.

COMPANY.	B.	A.	Closing
Allegheny Gas Co.	$40.00	....	$40.00
Bridgewater Gas Co	30 @ $34½	....	34.13
Chartiers Val. Gas	46.75	48.50	47.25
Columbia Oil Co.	2.00	3.00	2.88
Consolidated Gas Co.	....	....	....
East End E. Light Co.	60.00	....	60.00
East End Gas Co	....	....	....
Forest Oil	92.00	99.00	95.00
Hazlewood Oil Co.	49.00	51.00	50.00
La Noria Mining	13.00	25.00	25.00
Luster Mg. Co.	15.00	19.00	17.00
Manuf'turers Gas Co.	....	....	....
Nat. Gas Co. of W. Va	....	....	....
N. Y. & Clev. Gas Coal.	30.50	32 50	32.50
Ohio Valley Gas.	26.00	40.00	26.50
Mansfield C. & C. Co.	....	....	....
Pennsylvania Gas	13.00	15.00	14.00
People's Natural Gas.	....	40.00	40.00
People's N. G. & P. Co.	16.00	17.50	17.00
Philadelphia Co.	*32.50	*31.38	*31.38
Pine Run Gas Co.	....	61.00	61.00
Pittsburg Gas	72.00	....	72.09
Silverton Mg. Co.	....	1.25	1.25
South Side Gas.	....	....	....
Tuna Oil Co.	70.00	70.00	70.00
Union Gas	....	....	....
Washington Oil Co.	79@80	81.00	80.00
W'house Brake Co.	59.00	....	59.00
W'house A. B. Co.	112.90	114.00	113.00
W'house E. Light.	*43.50	*43.50	*43.50
W'moreland & Camb.	....	....	....
Wheeling Gas.	18.50	22.00	20.00
Yankee Girl Mg.	3.00	3.00	2.75

* Actual selling price.

Prices bid, asked and closing during the week ending April 10.

Sales during the week ending April 10, 1890:

Chartiers Gas	10 shares.	@$47.00
East End Electric	100 "	@$60.00
People's N.G.&P.	40 "	@$17.00
Philadelphia Co.	195 "	$31.38@$32.50
West. Air B. Co.	9 "	@$111.00
West. Electric	6 "	@$43.50
Wheeling Gas	20 "	@$20.00

Sales at the New York Stock Exchange week ending April 11:

	Sales.	Price— H.	L.
*American Cotton Oil	2,060	26¾	26
National Lead	9,030	18⅛	17¼
Sugar	52,573	65	62⅝

* Trust receipts.

St. Louis. April 2.

CLOSING PRICES.

COMPANY.	Bid.	Asked.
Adams, Colo	$ .75	$ 1.00
American & Nettie	1.78	1.80
Anderson	....	....
Aztec, N. Mex	.24	.25
Bi-Metallic	27.00	....
Black Oak, Cal	.01	.02
Black Spar	....	....
Bremen	....	.02½
Buckskin	.06	.07
Carriboo, Idaho	....	....
Central Silver	.17½	.20
Cleveland, Colo	.03	.04½
Cleveland, Idaho	....	.40
Cœur d'Alene	.70	....
Dinero, Colo	.00½	.01½
Golden Era, Mont	.02	.02½
Golden King	.11	.12
Gold Run	....	....
Granite Mountain, Mont.	42.25	43.00
Hope, Mont	2.57½	....
Ingram	.55	.68¾
Iron Clad	....	....
Ivanhoe, Colo	.08	....
I. X. L., Colo	....	....
Keystone	.03	.03½
La Union	.14	.15
Little Giant	.02	.03
Major Budd, Mont	.14	.15
Mexican Imp., Mex	.17½	.18¾
Michael Breen	.60	.70
Montrose Placer, Colo.	.37½	.45
Mountain Key	.60	.65
Mountain Lion	06½	.07½
Neath, Colo	.13	.15
Old Colony	....	....
Old Jesuit	....	....
Pat Murphy, Colo	.08	.08½
Pedro	.02	.03
Phillips, Colo	....	....
Pine Grove, Idaho	.04	.05
Queen of the West, Idaho	.09½	.11
Raspberry, Mont	....	....
San Francisco, Mont	.02	.02½
Silver Age, Colo	1.50	1.70
Silver Bell	....	....
Small Hopes, Colo	....	.90
Tourtelotte, Colo	.04½	.05
West Granite, Mont	.80	.90
Wire Patch	.15	....
Yuma, Ariz	.62½	.70

Trust Stocks. April 11.

The following closing quotations are reported to-day by C. I. Hudson & Co., members of New York Stock Exchange:

CERTIFICATES.		
American Cotton Oil, old	$29	@$31
*American Cotton Oil new	..	@ ..
Cattle Trust	..	@ 15
Distillers' & Cattle Feeders'.	38	@ 39¾
Linseed Oil	45	@ 46
National Lead	17¼	@ 17½
Natural Gas	..	@120
Standard Oil	165	@166½
Sugar Refineries	62½	@ 62⅝

*These are the American Cotton Oil Central Trust Co.'s receipts and are known as new, and represent the old certificates which have been deposited in the Central Trust Co. in furtherance of the reorganization plan—from a trust to a corporation.

Foreign Quotations.

London.

COMPANY.	Highest.	Lower.
Almada, Mex	1s 3d.	9d.
Amador, Cal	18s.	16 .
Appalachian, N. C.	1s.	6d.
Canadian Phos. Canada.	£⅜	£⅛
Carlisle, N. Mex	3s	2s.
Colorado, Colo	3s. 3d.	2s. 9d.
Comstock, Utah	....	....
Condova	....	....
Cons. Esmeralda, Nev.	3s. 3d.	2s. 9d.
Denver Gold, Colo.	1s.	6d.
Dickens Custer, Idaho.	2s.	1s. 6d.
East Arevalo, Idaho.	3s.	2s.
Eberhardt, Nev	....	...
El Callao, Venezuela	....	...
Elmore, Idaho	2s. 6d.	2s. 6d.
Empire, Mont	....	3s.
Garfield, Nev	4s.	2s. 6d.
Jay Hawk Mont	3s.	2s. 6d.
Josephine, Cal	4s.	2s.
Kohinoor, Colo	2s.3d.	1s. 9d.
La Luz, Mex	1s. 6d.	1s.
La Trinidad, Mex	....	...
La Valera, Mexico	1¼s.	1s.
Montana Lt., Mont	£1⅛	£1¼
New California, Colo	8s.	7s.
New Consolidated	1s.	6d.
New Eberhardt, Nev	1s.	6d.
New Emma, S., Utah	2s. 3d.	1s. 9d.
New Flagstaff, Utah	2s.	1s. 6d.
Newfoundland, N. F	3s.	2s. 6d.
N. Gold Hill, N. C.	1s.	6d.
New Hoover Hill, N. C.	1s. 6d.	1s.
Old Lout, Colo	£15-16	£13-16
Palmarejo, Mex	17s. 6d.	16s. 6d.
Pinos Altos, Mex	£¾	£⅝
Pittsburg Cons., Nev.	2s.	1s.
Richmond Con., Nev.	1¾s.	1¼s.
Ruby & Dunderberg, Nev	1s. 1½d.	6d.
Sam Christan, N. C.	2s. 3d.	1s. 9d.
Sierra Buttes Cal.	5s.	4s.
" Piumas Eur.	£1	£⅞
Sonora, Mex	1s.	6d.
Stanly, N. C	3s. 6d.	2s. 6d.
United Mexican, Mex	5s 6d.	....
U. S. Placer, Colo	2s. 6d.	2s.
Viola Lt., Idaho	2s. 3d.	1s. 9d.

Highest and lowest prices during the week ending March 29th.

Paris.

	Francs.	Francs.
Belmez, Spain	675.00	675.00
Callao, Venez	75 00	75.00
Callao Bis, Venez	4.00	4.00
East Oregon, Ore	10.50	10 50
Forest Hill Divide, Cal.	180 00	180 00
Golden River, Cal.	400.00	400.00
" " parts	65.00	65.00
Lexington, Mont.	135.00	135.00
" parts	4.25	4.25
Ouray, Colo	10.00	10.00
Rio Tinto, Spain	375.00	375 00
Tharsis, Spain	115 00	115.00

Highest and lowest prices during the week ending March 27th.

CURRENT PRICES.

These quotations are for wholesale lots in New York.

CHEMICALS AND MINERALS.

Acid—Acetic, ℔ 100 lbs. $1.75@$2.00
Muriatic, 18°, ℔ 100 lbs 1.00@1.50
Muriatic, 20°, ℔ 100 lbs. 1.12½@1.75
Muriatic, 22° ℔ 100 lbs. 1.37½@2.00
Nitric, 36°, ℔ 100 lbs. 4.00@4.25
Nitric, 42°, ℔ 100 lbs. 6.00@6.25
Oxalic, ℔ 100 lbs. 6.50@10.50
Sulphuric, 60°, ℔ 100 lbs. 80@1.25
Sulphuric, 66°, ℔ 100 lbs. 1.00@1.75

Alkali—
Refined, 48 p. c. @2¾
Refined, 58°. 2¾@3

Alum—Lump, ℔ lb. 1¾
Ground, ℔ lb. 1½@2
Lump ℔ ton, Liverpool £4 17 6
Sulphate of Alumina, ℔ ton. £4 10

Aqua Ammonia—18°, ℔ lb. 4¾
20°, ℔ lb. 6
22°, ℔ lb. 6@7
26°, ℔ lb. 10@11

Ammonia—Sul., ℔ 100 lbs. 3.15
Carb., per lb. 7½@8½

Arsenic—White, powdered, ℔ lb. 3¼@3½
Red, ℔ lb. 5¾@6¾
White, at Plymouth, ℔ ton. £12 2 6d.

Asbestos—Am., p. ton $50@$300
Italian, p. ton, c. i. f. L'pool £18@£60

Asphaltum—P. ton 13.00
Prime Cuban, ℔ lb. 4½@5½c
Hard Cuban, ℔ ton $28.00
Trinidad, refined, ℔ ton $30.00

Barytes—Sulph., Am. prime white 17@20
Sulph., foreign, floated, p. ton 19½@21.50
Sulph., off color, p. ton 11.50@14.00
Carb., lump, f.o.b. L'pool, ton £6
No. 1, casks, Runcorn " £4 10 0
No 2, bags, Runcorn " " 3 15 0

Bleach—Over 35 p.c., ℔ lb. 2@2½

Borax—Refined, ℔ lb. 9½@9⅝
Concentrated 7¾@8⅜
Refined at Liverpool, ℔ ton. £29

Brimstone—*See Sulphur.*

Bromine—℔ lb. 37@38

Chalk—℔ ton 1.75
Precipitated, ℔ lb. 4¾@5

China Clay—English, ℔ ton 13.50@18.50
Southern, ℔ ton 13.50

Chrome Yellow—℔ lb. 10@25

Cobalt—Oxide, ℔ lb. 2.60@2.90

Copper—Sulph. English Wks, ton £20@£21

Copperas—Common, ℔ 100 lbs. 70
Best, ℔ 100 lbs. 75@1.00
Liverpool, ℔ ton, in casks £1 15s.

Cream of Tartar—Am. 99% 22½
Powdered, 99 p. c. 23

Emery—Grain, ℔ lb. 4½@5
Flour, ℔ lb. 2¾@3½

Feldspar—Ground, ℔ ton. 15.00

Fuller's Earth—Lump, ℔ bbl. .90@95
Powdered, ℔ lb. 1½@2

Gypsum—Calcined, ℔ bbl. 1.25@1.50

Iodine—Resublimed. 2.75

Kainit—℔ ton $9.25@19.75

Kaolin—*See China Clay.*

Lead—Red, ℔ lb. 6¾@9
White, American, in oil, ℔ lb. 6¾@7¼
White, English, ℔ lb 8½@8¾
Acetate, or sugar of, white 12@13

Lime Acetate—Amer. Brown. .95@1.00
" Gray 1.75@1.87½

Litharge—Powdered, ℔ lb. 6½@6¾
English flake, ℔ lb. 9@9½

Magnesite—Greek, ℔ ton. 20.00

Manganese—Crude, per unit .23@.28
Oxide, ground, per lb 2½@6½

Mercuric-Chloride—(*Corrosive Sublimate*), ℔ lb. 70@72

Mineral Wool—℔ lb. 2

Mica—In sheets according to size, 1st quality, ℔ lb. .25@$6.00

Ochre—Yellow, "B. F.," ℔ ton, f.o.b. mill 30.00
"J. F. L. S.," ℔ lb. ex dock 2½

Phosphate Rock—S. Carolina, per ton, o. b. Charleston. 5.75@7.00
Ground, ex vessel New York. 11.00
Canadian Apatite, lump, f. o. b. at Montreal, ℔ ton 16.00

Phosphorus—℔ lb. 70@75

Plumbago—Ceylon, ℔ lb. 4@5
American, ℔ lb. 5@7

Potassium—Cyanide, ℔ lb. .39@40
Bromide, ℔ lb. 33
Chlorate, ℔ lb. 13@10
Carb. ℔ lb. 4.70@5.54
Caustic, ℔ lb. 7½@8
Iodide. 2.65@2.70
Muriate, ℔ 100 lbs. 1.77½@1.80
Nitrate, refined, ℔ lb. 6@8
Bichromate, ℔ lb 10¼@11
Sulphate, ℔ 100 lbs. 2.30@2.35
Yellow Prussiate, ℔ lb. 17½@18
Red Prussiate, ℔ lb. 41@45

Pumice Stone—Select lumps, lb. 3¼
Original cks., ℔ lb. 1¾@2
Powdered, pure, ℔ lb. 2¼@2½

Pyrites—Non-cupreous, p. units 10d

Quartz—Ground, ℔ ton. 14.00@16.00

Rotten Stone—Powdered, ℔ lb. 3¼@3½
Lump, ℔ lb. 6@10

Salt—Liverpool, ground ℔ sack. 75@80
Turk's Island, ℔ bush. 25@28

Salt Cake—℔ lb. 60@62½

Saltpeter—Crude, ℔ lb. 5¼@5¾
Refined, ℔ lb. 6@8

Soda Ash—Carb., 48 % 100 lb. 2¼
Caustic, 48 % 2¼@2½
Soda Caustic, 60%. 3.25@3.35
" " 70% 3.00
" " 74–6% 2⅞
Sal, English, ℔ 100 lbs. 1¼@1⅝
Sal, American, ℔ 100 lbs .90
Nitrate, 100 lbs. 1.70

Strontium—Nitrate ℔ lb. 9@9½

Sulphur—Roll, ℔ lb. 1¾
Flour, ℔ lb 2

Crude Brimstone, 2s., ℔ ton, 19.00@19 25
Crude Brimstone, 3ds, ℔ ton, 18.50@18.75

Talc—Ground French, ℔ lb 1¼@1½
Domestic, ℔ ton $18@$20
c. i. f. Liverpool, ℔ ton £4 5

Vermillion—American, ℔ lb. 61
English, ℔ lb. 82@85

Vitriol—(Blue), Ordinary, ℔ lb. 5½@5¾
Extra, ℔ lb. 7

Zinc Oxide—Am., Dry, ℔ lb. 4½
Antwerp, Red Seal, ℔ lb. 6@6¼
Paris, Red Seal, ℔ lb. 6¾@7
* Spot.

THE RARER METALS.

Aluminum—(Metallic), ℔ lb. $2.@$2.50
Sheet, per lb. 2.50

Arsenic—(Metallic), per lb. .40

Barium—(Metallic), per gram. $4.00

Bismuth—(Metallic), per lb. 2.75

Cadmium—(Metallic), per lb. 1.00

Calcium—(Metallic), per gram 10.00

Cerium—(Metallic), per gram. 7.50

Chromium—(Metallic), per gram 1.00

Cobalt—(Metallic), per lb. 6.00

Didymium—(Metallic), per gram 9.00

Erbium—(Metallic), per gram. 7.50

Gallium—(Metallic), per gram 140.00

Glucinum—(Metallic) per gram. 12.00

Indium—(Metallic), per gram. 9.00

Iridium—(Metallic), per oz. 7.00

Lanthanum—(Metallic), per gr. 10.00

Lithium—(Metallic), per gram. 10.00

Magnesium—Per lb. 4.50

Manganese—Metallic, per lb. 1.10
Chem. pure, per oz. 10.00

Molybdenum—(Metallic), per gm. .50

Niobium—(Metallic), per gram. 5.00

Osmium—(Metallic), per oz. 65.00

Palladium—(Metallic), per oz. 35.00

Platinum—(Metallic), per oz. 9.00

Potassium—Metallic, per lb. 28.00

Rhodium—(Metallic), per gram. 5.00

Ruthenium—(Metallic), per gm. 5.50

Rubidium—(Metallic), per gram 2.00

Selenium—(Metallic), per oz. 1.80

Sodium—(Metallic) per lb. 2.50

Strontium—(Metallic), per gm. .60

Tantallum—(Metallic) per gram 9.00

Telurium—(Metallic) per lb. 5.00

Thallium—(Metallic) per gram. .25

Titanium—(Metallic) per gram. 2.25

Thorium—(Metallic) per gram. 17.00

Tungsten—(Metallic) per oz. 2.25

Uranium—(Metallic), per lb. 5.00

Vanadium—(Metallic), per gm. 22.00

Yttrium—(Metallic), per gram. 9.00

Zirconium—(Metallic), per oz. 65.00

BUILDING MATERIAL.

Bricks—Pale, ℔ 1,000 3 50@3.75
Jerseys, ℔ 1,000 5.50@7.00
Up Rivers, ℔ 1000 6 75@7 00
Haverstraw seconds, ℔ 1000. 6.50@7.00
Haverstraw firsts ℔ 1,000 7.00@7.75
Fronts, nominal, ℔ 1000.
Croton 14.00@16.00
Wilmington 20.00@21.00
Philadelphia @22.00
Trenton @22.00
Baltimore

Building Stone—Amherst freestone, ℔ cu. ft. 95@1.00
Brownstone, ℔ cu. ft. 1.00@1.35
Granite, rough, ℔ cu. ft. 45@1.25
Granite, Scotch ℔ cu. ft. 1.00@1.15

Cement—Rosendale, ℔ bbl .85@1.10
Portland, American, ℔ bbl. 2.15@2.45
Portland, foreign, ℔ bbl. 2.30@2.40
Portland, " special brands. 2.45@2.75
Roman, ℔ bbl. 2.65@2.85
Keene's coarse, ℔ bbl. 4.50@5.50
Keene's fine, ℔ bbl. 7.00@8.25

Slate—Purple and green roofing, ℔ 100 ft. 7.00@7.50
Red roofing, ℔ 100 sq. ft. 12.00
Black, roofing, ℔ 100 sq. ft. 4.25@5.50

Lime—Rockland, common ℔ bbl. 1.00
Rockland, finishing, ℔ bbl. 1.20
St. John, com. and finish, ℔ bbl. .90@.95
Glens Falls, com. and fin., ℔ bbl .85@1.10

Labor—Ordinary, ℔ day. 1.50@2.00
Masons, ℔ day 4.00
Plasterers, ℔ day 4.00
Carpenters, ℔ day 3.50
Plumbers, ℔ day 3.50
Painters, ℔ day 2.50@3.50
Stonesetters, ℔ day 3.50@4.00
Tilelayers, ℔ day 3.50@4.50
Bricklayers, ℔ day 4 00

THE ENGINEERING AND MINING JOURNAL will thank any one who will indicate any other articles which might with advantage be quoted in these tables or who will correct any errors which may be found in these quotations.